

Project:	Catalogue #:	Type:
Notes:		

### Product Description

The MSUi series provides supplemental lighting for the surgical / operating room. Commonly located above the table perimeter using Symmetric or Asymmetric distributions. It is UL Listed for wet locations, cleanroom ISO-3, certified dust tight and water resistant to IP65 for frequent rigorous cleaning practices.

This fixture is equipped with BIOS SkyBlue® circadian LED technology, specifically for increased melanopic lux and circadian stimulus for daytime applications. This luminaire can be configured with either BIOS Static for applications where a constant level SkyBlue® content is desired, or BIOS Dynamic for applications requiring variable SkyBlue® content based on time of day. Provides minimum melanopic (M/P) ratio of >0.7 at 3000K, CRI 80+, R9>90; and cyanosis observation index (COI) less than or equal to 5.4.

### Applications

- Medical Surgical Suites

### Featured Options

- Symmetric & Asymmetric options

### Features

- Shallow Design, 4" Deep with Emergency
- Dimming to 1% (0-10V)
- Triple gasketed cleanroom construction
- Mil-Std-461G certified
- Smooth lens for easy cleaning
- Room side access to all electrical components<sup>1</sup>

### Housing

Precision formed; hole-free seam welded 20 gauge cold rolled steel housing. Flattened, sealed knockout(s). See options for additional material choices and row mounting. Closed cell neoprene gasket provided to seal flange to ceiling.

### Door Frame

Inset one-piece door frame, fabricated from 18 gauge, cold rolled steel with TIG welded corners. Countersunk flat head, stainless steel, captive fasteners with integral silicone o-rings. Door frame is removable, reversible, and hinged by stainless steel aircraft cables. High performance Poron™ gasket seals door frame to housing.

### Lens

High diffusion, impact resistant 0.125" thick acrylic lens provides symmetric distribution. Smooth external surface for easy cleaning. Symmetric/asymmetric acrylic lens is optional. Radiated emissions (REI01) mitigated below Mil Std 461G limits by use of special filters and secondary circuit design elements. (This makes a metalized RFI grid no longer necessary.) Other lens options available. Lens sealed to door frame with silicone sealant.

### LED

LED board modules are high efficiency and closely regulated to maintain CRI, color consistency, lumen performance, and efficacy. Select from 3000K, 3500K and 4000K color temperatures with a color consistency of 3 SDCM, standard 80 CRI, Lifetime L70 is greater than 60,000 hrs. Provides minimum melanopic (M/P) ratio of >0.7 at 3000K, CRI 80+, R9>90; and cyanosis observation index (COI) less than or equal to 3.3.

### Electrical

The standard electronic driver is constant current, programmable and dimmable to 1%<sup>1</sup> using a 0-10V protocol. High efficiency (>85%) and low THD (<10%). Certified to Mil-Std-461G for conducted emissions as well as FCC Part 15. 120-277Vac or 347Vac, 50/60hz. See "Options" for Lutron™ or DALI driver choices. Internal Emergency Drivers are serviceable from the room side<sup>1</sup>.

### Mounting/Installation

Flange installation is supported by swing style mounting brackets. Grid installation suitable for 1" and 1.5" T-Bar ceilings. See ordering key for additional 2" T-Bar support (option C57) Ambient operating temperature: -4°F (-20°C) to 104°F (40°C).

### Finish

Anti-microbial gloss white polyester powder coat finish with 5-stage pre-treatment.

### Certifications

UL listed (CAN & USA) for wet locations under covered ceiling. Recessed Type IC for insulated ceilings. NSF2 for Non-food zone, Splash Zone. IEC60598 IP65 Certified. Mil-Std-461G certified. Cleanroom classified ISO3-8.

### Warranty

5 year limited warranty. For complete warranty, click here:

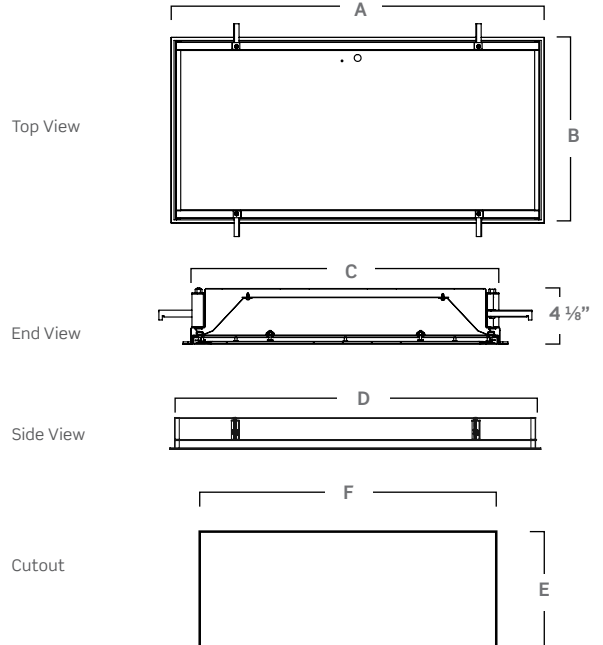


### Approvals

- UL listed to CSA and UL standards for insulated ceilings and wet location.
- Certified IP65 & Certified NSF2
- MIL STD 461G Certified
- Cleanroom class ISO3-8.



### Dimensions



	Dimensions (inch) & Weights					
	A	B	C	D	E	F
1x4	47 3/4"	11 3/4"	10 11/16"	46 3/4"	10 11/16"	46 3/4"
2x2	23 3/4"	23 3/4"	22 11/16"	22 7/8"	22 11/16"	22 7/8"
2x4	47 3/4"	23 3/4"	22 11/16"	46 3/4"	22 11/16"	46 3/4"

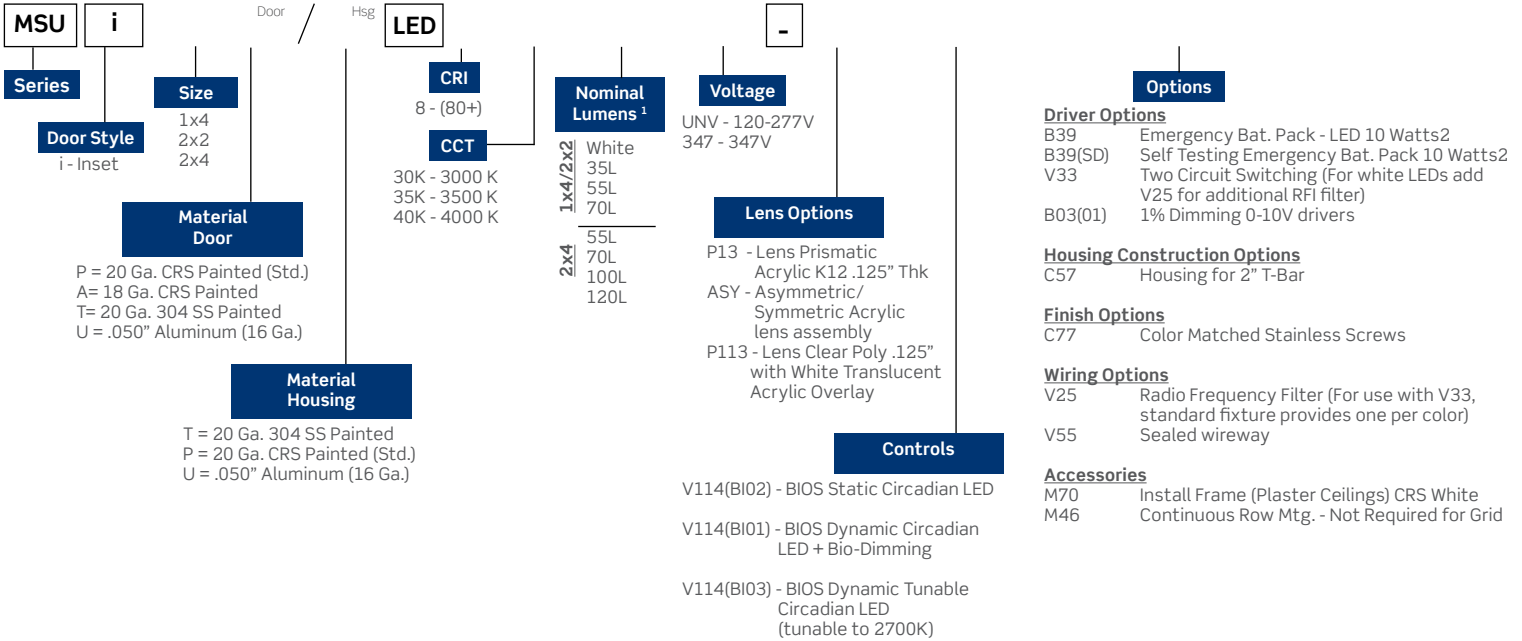
Consult installation guide for exact dimensions.

<sup>1</sup> Standard emergency battery pack options are internal and serviced from the room side. The exception is for some 2x2 wattages may have remote battery packs. Consult factory for details

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**Order Key**

**EXAMPLE: MSUi2x4-P/PLED840K70LUNV-B39**



Size	Nominal Lumens	Delivered Lumens	Watts	Efficacy
1x4	35L	3585	32	112
	55L	5538	51	109
	70L	7064	68	104
2x2	35L	3564	31	115
	55L	5571	50	111
	70L	7035	65	108
2x4	55L	5517	45	123
	70L	7085	59	120
	100L	10093	80	126
	120L	12096	99	122

\* Lumen values are based on 4000K, 80 CRI performance. See Lumen Multipliers below for other CCT or CRI performance data.

CRI	CCT	Lumen Multipliers
80 CRI	3500K	0.98
	4000K	1.00
	5000K	1.04

**Ordering Key Example**

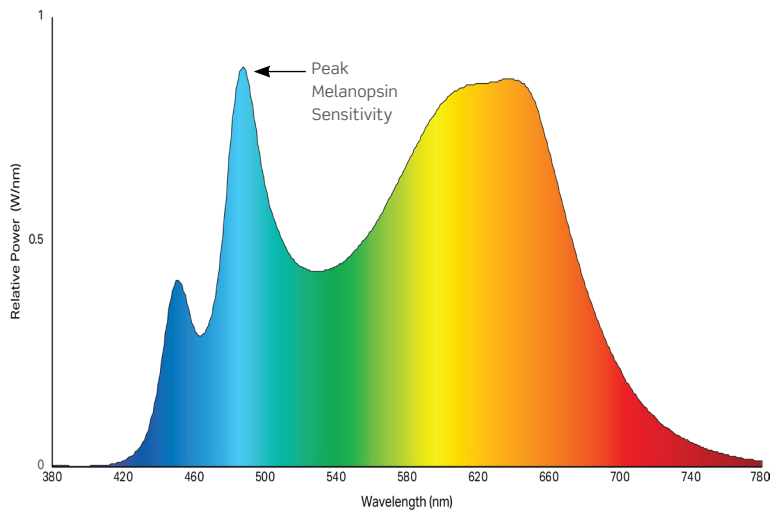
MSUi2x2-LED840K035LUNV-V114(BI02)	<ul style="list-style-type: none"> <li>Static CCT (4000K) fixture, output dimmable to 1%</li> <li>SkyBlue™ is always present</li> </ul>
MSUi2x2-LED840K035LUNV-V114(BI03)	<ul style="list-style-type: none"> <li>2-Channel Tunable (4000K - 2700K) fixture dimmable to 1%</li> <li>SkyBlue™ is always present from 4000k-3000k</li> </ul>
MSUi2x2-LED840K035LUNV-V114(BI01)	<ul style="list-style-type: none"> <li>Single-Channel Bio-Dimming from 4000K with SkyBlue™ to &gt;2700K</li> <li>At 2700K, dim total output to 1%</li> <li>At 2700K, SkyBlue™ no longer present</li> </ul>

<sup>1</sup>Standard emergency battery pack options are internal and serviced from the room side. The exception is for some 2x2 wattages may have remote battery packs. Consult factory for details.

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### BIOS Static Circadian LED Solution - V114 (BI02)

BIOS SkyBlue® Spectrum lighting solutions support proper daytime circadian stimulus, communicating directly with human circadian biology through a non-visual photo receptor in the eye.



BIOS Static Spectrum Light Engine delivers the industry's best melanopic-to-photopic (M/P) ratio, with R9 greater than 90 at each color temperature. BIOS Static Spectrum Light Engine is the ideal replacement for static color light fixtures.

Static Engine Spectral Power Distribution (3500K)

### Nominal Performance

CCT	Melanopic Ratio (M/P) <sup>1</sup>	CRI	R9	COI <sup>2</sup>
3000K	0.74	81	90	5.4
3500K	0.83	84	96	3.3
4000K	0.92	84	95	1.5

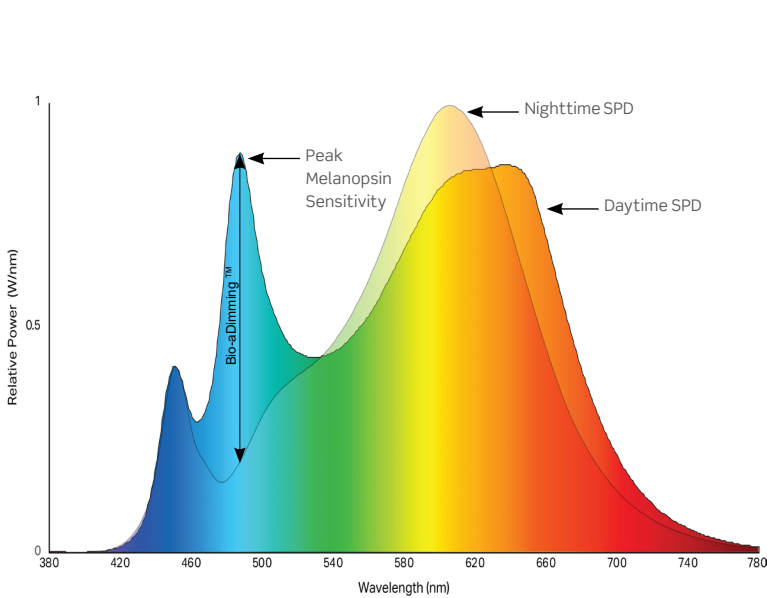
<sup>1</sup> M/P is a ratio that describes the relative melanopic lux (M) versus the photopic lux (P)

<sup>2</sup> COI - Cyanosis Observation Index

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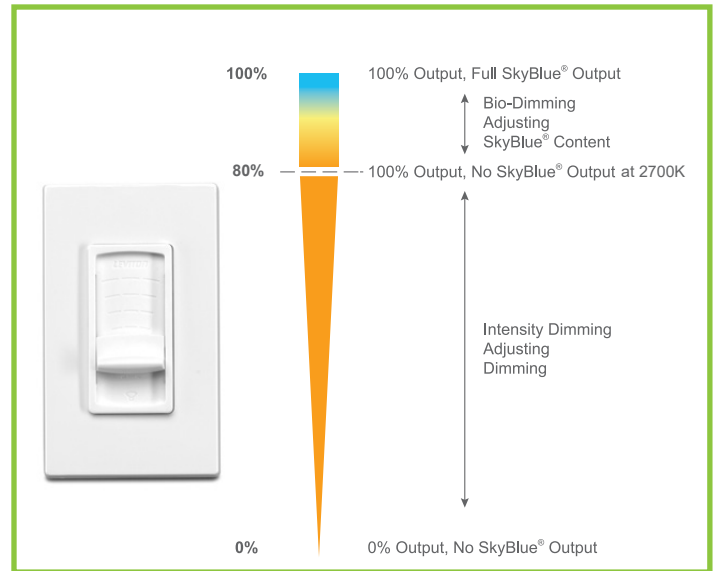
### BIOS Dynamic Circadian LED Solution - V114 (BI01)

BIOS SkyBlue<sup>®</sup> Dynamic Light Engine provides full daytime circadian stimulus and can be dynamically adjusted via the Bio-Dimming<sup>™</sup> module. Using a standard single channel 0-10V dimmer reducing melanopic lux while keeping light and CCT constant<sup>3</sup>. When the SkyBlue<sup>®</sup> content has been removed (at 2700K), the light level can be adjusted. The Bio-Dimming<sup>™</sup> module also detects the preferred light levels over time and will adjust the high end trim of the system to those preferences.



Dynamic Engine Spectral Power Distribution (3500K)

### BIOS Dynamic Circadian LED + Bio-Dimming<sup>™</sup>



### Nominal Performance

CCT		Melanopic Ratio (M/P) <sup>1</sup>		CRI	R9	COI <sup>2</sup>
Daytime	Nighttime	Daytime	Nighttime			
3000K	2700K	0.74	0.47	81	90	5.4
3500K	2700K	0.83	0.47	84	96	3.3
4000K	2700K	0.92	0.47	84	95	1.5

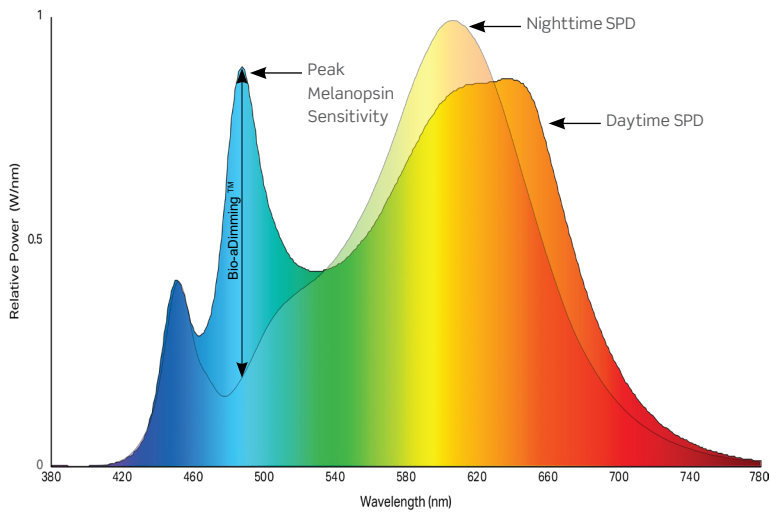
<sup>3</sup> CCT may vary by up to 500K

<sup>4</sup> Value as shown represents COI provided by daytime LED Spectrum.

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### BIOS Dynamic Circadian LED Solution - V114 (BI03)

BIOS SkyBlue<sup>®</sup> Dynamic Light Engine provides full daytime circadian stimulus and can be dynamically adjusted via tunable circadian LED module. Using a standard two channel 0-10V dimmer reducing melanopic lux and adjusting the output light level while keep CCT constant<sup>3</sup>. The SkyBlue<sup>®</sup> below 3000K no longer present. The tunable module also detects the preferred light levels over time and will adjust the high end trim of the system to those preferences.



Dynamic Engine Spectral Power Distribution (3500K)

### BIOS Dynamic Tunable Circadian LED (tunable to 2700K)

### Nominal Performance

CCT		Melanopic Ratio (M/P) <sup>1</sup>		CRI	R9	COI <sup>2</sup>
Daytime	Nighttime	Daytime	Nighttime			
3000K	2700K	0.74	0.47	81	90	5.4
3500K	2700K	0.83	0.47	84	96	3.3
4000K	2700K	0.92	0.47	84	95	1.5

<sup>3</sup> CCT may vary by up to 500K

<sup>4</sup> Value as shown represents COI provided by daytime LED Spectrum.