# SIMPLESEAL™ NARROW SPECTRUM
CSEDO SERIES – RED & BIOS SkyBlue™ – OVERLAPPING DOOR

PRODUCT FEATURES:

» Features BIOS SkyBlue Technology to benefit daytime alertness, cognition, mood and circadian rhythms

» Narrow-spectrum 630nm red LED circuit provides only high-purity light for spectrally-sensitive applications

» Diffused high-efficiency lens for reduced glare

» One-piece overlapping door provides air-tight integrity of luminaire

» Suitable for universal installation into 1.0" and 1.5" grid or flange (drywall) ceilings

1'×4'   2'×2'   2'×4'
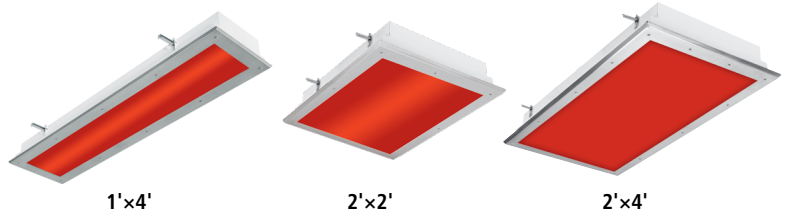
SPECIFICATIONS

HOUSING: Standard 24-gauge (optional 20-gauge) cold rolled steel, hole-free, one-piece, seam-welded construction. 18-gauge housing flange with mitered and welded corners. White TGIC polyester powder coat finish — 5-step pre-treatment. Salt spray test: 1,000 hours; Reflectance: 92%.

DOORFRAME: 20-gauge type 304 stainless steel (#4 finish-post fabrication). One-piece 60° beveled perimeter construction. Continuous angle lens retention system. Mechanical guide for doorframe fastener alignment. Doorframe secured to housing with stainless steel aircraft cables and captive flush mounted Phillips head stainless steel fasteners (8) for 2×2, (12) for 2×4.

OPTICS: .Symmetric optic includes diffused, impact-resistant acrylic lens.

DOORFRAME GASKET: One-piece closed cell extruded Nitrile gasket seals doorframe to housing and ceiling structure.

LED MODULE: BIOS: Serviceable static, dynamic or tunable mid-power Gen 2 BIOS Biological LED modules. Biological Static, Biological Dynamic, and Biological Tunable LED source with blue spectrum peak at 490nm and higher melanopic ratio. CRI 80+ with R9 > 90. Biological Dynamic features 500K downward CCT shift when dimmed for evening applications requiring lower melanopic ratio. Biological Tunable features 2700K CCT for evening applications. Refer to table for specific melanopic values. Red: Serviceable 630nm red mid-power LED array (16nm FWHM bandwidth).

DRIVER: 120-277VAC, 50/60Hz electrical input (PF ≥ 0.9, THD < 20%). Biological Static: Serviceable, constant-current single channel driver with single analog (0-10V) control input for intensity. 1-100% range with dim to dark capabilities and a linear dimming curve. Biological Dynamic: Serviceable constant-current driver with the BIOS Dynamic Bio-Dimming™ module keeps light output constant while reducing melanopic lux. Single analog (0-10V) control input. 1-100% dimming range with dim-to-dark capabilities and a linear dimming curve. Dimming from 100-75% reduces CCT by 500K, dimming below 75% reduces light level. Biological Tunable: Serviceable, constant-current multi-channel programmable driver with dual analog (0-10V) control inputs for intensity and CCT. Optional DALI (Type 8) driver. Logarithmic intensity profile with 0.1-100% range, with dim-to-dark capabilities. Linear profile on CCT adjustment. Red: Serviceable constant- current programmable driver. Dimming protocol matches BIOS Biological circuit selection: 0-10V dimming with 1-100% range and dim-to-dark capabilities or DALI with 1-100% range and dim-to-dark capability

INSTALLATION: Non-IC recessed ceiling mounting into grid and flange application types. Flange installation utilizes included adjustable swing-out mounting brackets. Grid installation suitable for 1" and 1.5" T-bar ceilings. Housing is field-convertible between grid and flange-style mounting types. See Options for continuous row mounting and install frames.

PHOTOMETRICS: Photometry tested to the IESNA LM-79-08 standard. For additional photometric data, please go to www.kenall.com.

WARRANTY: Limited five (5) year warranty.

LISTINGS: Luminaire is certified to UL standards by Intertek Testing Laboratories for Wet Location. Certified IP66 per IEC 60598. CCEA Approved. Optional NSF Protocol P442 certified. FED-STD-209E/Class 1 (ISO 3) Cleanrooms. Suitable for BSL 1-4 laboratories. Suitable for EU GMP Grade A cleanrooms.

LED | cETLus LISTED | IP66 | NSF | ISO 3 Class 1 | CCEA Approved | P442 Option | bios ILLUMINATED

ORDERING INFORMATION (Ex: CSEDO-24-23RD/67B-40K8-DIM1-DV-2F-2H-SYM)

Model	Size	Lamp Power	Lamp Color	Driver	Voltage	Doorframe	Housing	Optics	Options
CSEDO								SYM	

Size
14	1'×4'
22	2'×2'
24	2'×4'

Lamp Power

1'×4'
23R/45B	23W Red/45W BIOS
23R/67B†	23W Red/67W BIOS

2'×2'
23RD/45BD	23W Red/45W BIOS Dual-Row
23RD/67B	23W Red/67W BIOS

2'×4'
23RD/67B	23W Red/67W BIOS
23RD/90B	23W Red/90W BIOS
23RD/135B†	23W Red/135W BIOS

Lamp Color
35K8	3500K SkyBlue / 80CRI min / R9 90+
40K8	4000K SkyBlue / 80CRI min / R9 90+

Driver Type
DIM1	BIOS Biological Static with 0-10V Dimming to 1% with Dim-to-Dark Capabilities
BIODIM1	BIOS Biological Dynamic with 0-10V Intensity Dimming to 1% and Dim-to-Dark Capabilities
ATW	BIOS Biological Tunable White with 0-10V Control of Intensity and CCT independently on 2 separate channels
DTW	BIOS Biological Tunable White with DALI Control of Intensity and CCT independently on 2 separate channels

Voltage
DV	120-277VAC, 50/60Hz
120	120VAC
277	277VAC

Doorframe Options
5F	20-Ga Type 304 SS (STD)
2F	20-Ga CRS
XF	20-Ga Type 316 SS
PAF	.063" Painted Fabricated Aluminum

Housing Options
4H	24-Ga CRS (STD)
2H	20-Ga CRS
5H	20-Ga Type 304 SS
XH	20-Ga Type 316 SS
PAH	.050" Painted Aluminum

Optics
SYM	Symmetric, Diffused DR Acrylic

Options
LEL▲	10W Emergency Battery Pack
20KV	20KV/KA Surge Protection per IEEE/ANSI C62.41.2 Cat. A
AMF▼	Antimicrobial Finish
FS	Fuse & Holder
HJ	Sealed Wireway
RF•	Radio Frequency Filter
RM‡	Continuous Row Mounting
P442◆	Optional NSF Protocol P442 Certified

Accessories
IF*‡	Install Frame

† n/a with BIODIM1 Driver Type
* Add .375" to ceiling cut out dimensions
• Voltage specific selection required. n/a with 23R/67B lamp on 1'×4' and 2'×2' sizes
▲ Voltage specific selection required. Wired to white LED when red/white lamping is selected. Height of fixture is 5.875" with LEL Option. 0°C/32°F min. operating environment.
▼ Applied only to exposed painted surfaces of luminaire (not available on stainless steel doorframes)
‡ Only available when installed in drywall ceilings (flange mount). Consult factory for ceiling layout assistance
◆ P442 only available on CSEDO24

SIMPLESEAL™
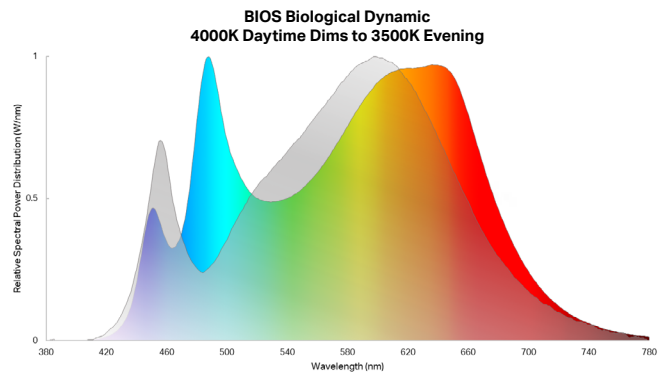## CSEDO SERIES – RED & BIOS SkyBlue™ – OVERLAPPING DOOR

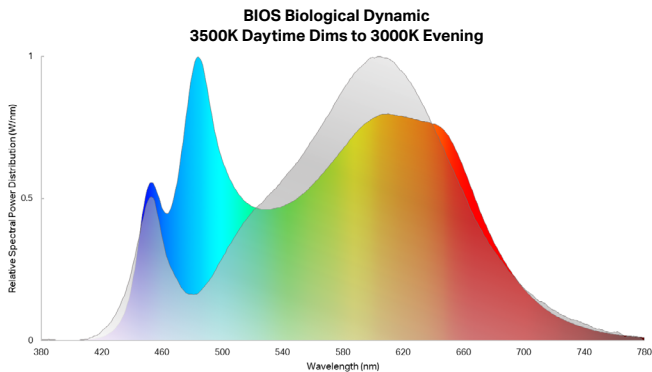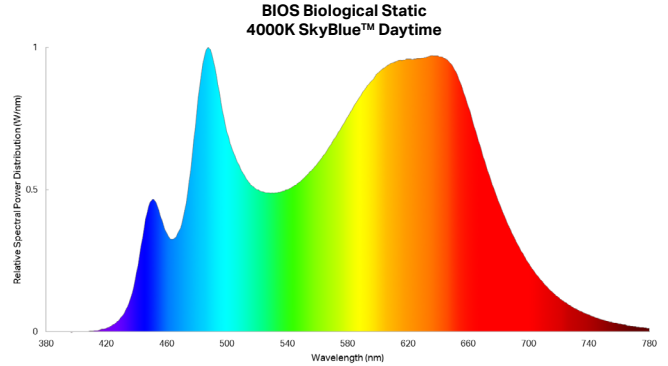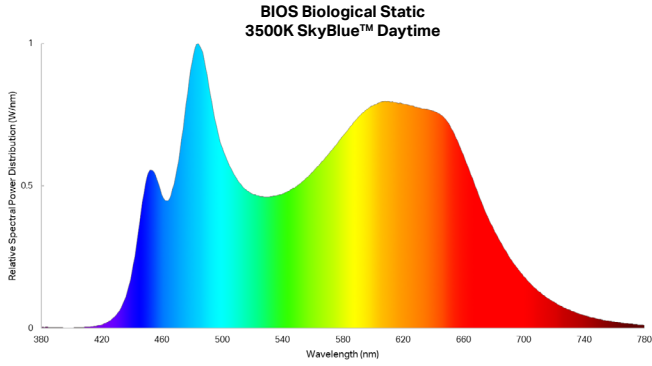**DELIVERED MELANOPIC RATIO OF 35K8 BIOS**

BIOS Type	Spectral Mode	Nominal CCT	Melanopic Ratio*	
			m-EER	m-DER
Biological Static	Daytime	3500K	≥0.80	≥0.72
Biological Dynamic	Daytime	3500K	≥0.80	≥0.72
	Evening	3000K	≤0.49	≤0.44
Biological Tunable	Daytime	3500K	≥0.80	≥0.72
	Evening	2700K	≤0.47	≤0.42

DELIVERED MELANOPIC RATIO OF 40K8 BIOS

BIOS Type	Spectral Mode	Nominal CCT	Melanopic Ratio*	
			m-EER	m-DER
Biological Static	Daytime	4000K	≥0.90	≥0.81
Biological Dynamic	Daytime	4000K	≥0.90	≥0.81
	Evening	3500K	≤0.57	≤0.51
Biological Tunable	Daytime	4000K	≥0.90	≥0.81
	Evening	2700K	≤0.47	≤0.42

*Melanopic ratios are provided in two forms: (m-EER) which is calculated using the WELL v2 methodology and the corresponding CIE melanopic Daylight Equivalent Ratio, (m-DER).
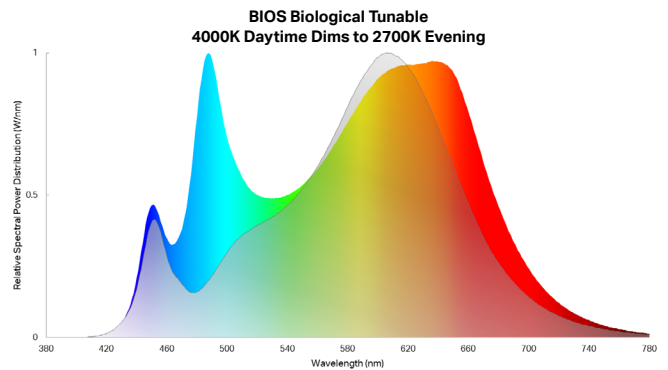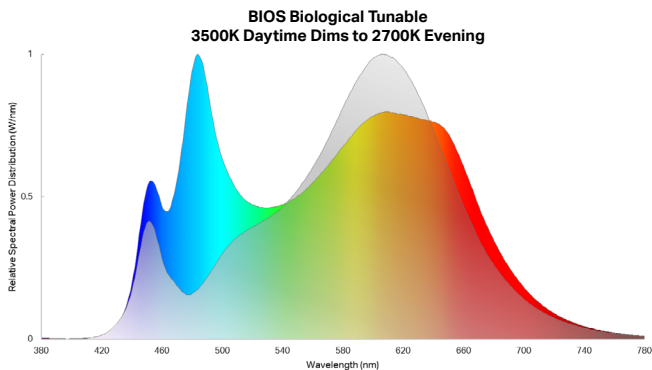
BIOS Biological Static
3500K SkyBlue™ Daytime

BIOS Biological Static
4000K SkyBlue™ Daytime

BIOS Biological Dynamic
3500K Daytime Dims to 3000K Evening

BIOS Biological Dynamic
4000K Daytime Dims to 3500K Evening

BIOS Biological Tunable
3500K Daytime Dims to 2700K Evening

BIOS Biological Tunable
4000K Daytime Dims to 2700K Evening

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PERFORMANCE

CSEDO Red w/BIOS

		Red LED Circuit			BIOS LED Circuit			
		Initial Delivered Lumens		Input Power (W)	Initial Delivered Lumens		Input Power (W)	Estd. L$_{70}$ LED Life: Red/White (hrs)
Size	Lamp Code	Flux @ 25°C (lm)	Efficacy (lm/W)		Flux @ 25°C (lm)	Efficacy (lm/W)		
1' × 4'	23R/45B-35K8	954	43	22	4,046	83	49	36,000 / 80,000
	23R/45B-40K8				4,393	90		
	23R/67B-35K8				6,197	86	72	
	23R/67B-40K8				6,729	93		
2' × 2'	23RD/45BD-35K8	1,021	46	22	4,298	88	49	36,000 / 80,000
	23RD/45BD-40K8				4,667	95		
	23RD/67B-35K8				6,584	91	72	
	23RD/67B-40K8				7,150	99		
2' × 4'	23RD/67B-35K8	1,171	53	22	7,337	102	72	36,000 / 80,000
	23RD/67B-40K8				7,838	109		
	23RD/90B-35K8				9,276	96	97	36,000 / 60,000
	23RD/90B-40K8				10,072	104		
	23RD/135B-35K8				13,149	89	147	36,000 / 60,000
	23RD/135B-40K8				14,277	97		

Subject to change without notice. Visit www.kenall.com for .ies files and additional information

Red Circuit Spectral Power Distribution (SPD)
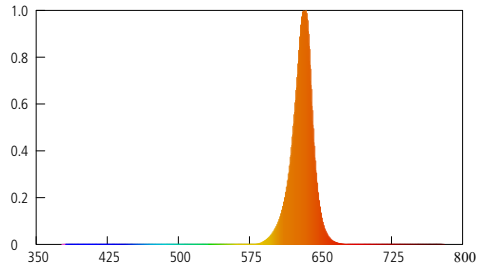
Purity: 1.0
UV: 0.0000% (<390nm)
Radiant Flux < 575nm: 0.000%
Bandwidth: 16nm
Peak Wavelength: 630nm

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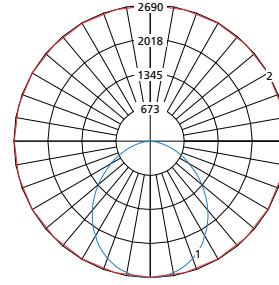
PERFORMANCE

Model: CSEDO14-23R/67B-35K8-DIM1-DV-2F-2H-SYM (White Mode)
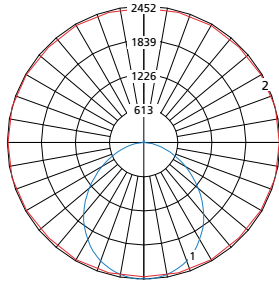
2452
1839
1226
613
2

Maximum Candela = 2452 Located At Horizontal Angle = 15, Vertical Angle = 2.5

— 1 - Vertical Plane Through Horizontal Angles (15-195) (Through Max. Cd.)
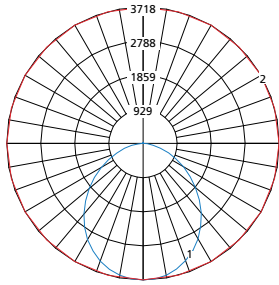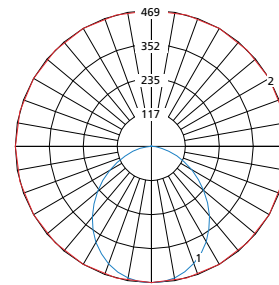— 2 - Horizontal Cone Through Vertical Angle (2.5) (Through Max. Cd.)

Model: CSEDO22-23RD/67B-35K8-DIM1-DV-2F-2H-SYM (White Mode)

2690
2018
1345
673
2

Maximum Candela = 2690 Located At Horizontal Angle = 15, Vertical Angle = 2.5

— 1 - Vertical Plane Through Horizontal Angles (15-195) (Through Max. Cd.)
— 2 - Horizontal Cone Through Vertical Angle (2.5) (Through Max. Cd.)

Model: CSEDO24-23RD/90B-35K8-DIM1-DV-2F-2H-SYM (White Mode)

3718
2788
1859
929
2

Maximum Candela = 3718 Located At Horizontal Angle = 0, Vertical Angle = 0

— 1 - Vertical Plane Through Horizontal Angles (0-180) (Through Max. Cd.)
— 2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)
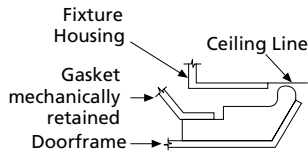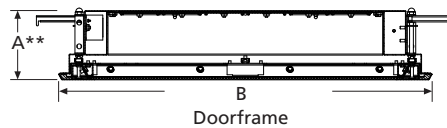
Model: CSEDO24-23RD/90B-35K8-DIM1-DV-2F-2H-SYM (Red Mode)*

469
352
235
117
2

Maximum Candela = 469 Located At Horizontal Angle = 0, Vertical Angle = 0

— 1 - Vertical Plane Through Horizontal Angles (0-180) (Through Max. Cd.)
— 2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)

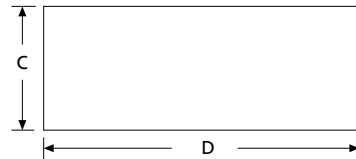*Luminous intensity of "red" mode is equal across all product sizes

DIMENSIONAL DATA

GASKET PROFILE

Fixture Housing
Ceiling Line
Gasket mechanically retained
Doorframe

CROSS SECTION

A**
B
Doorframe

CEILING CUTOUT

C
D

DIMENSIONAL DATA (IN INCHES)

	A	B	C	D
1×4	4.43	11.94 × 47.94	10.85	46.85
2×2	4.43	23.94 × 23.94	22.85	22.85
2×4	4.43	23.94 × 47.94	22.85	46.85

*   Add .375" to ceiling cut out dimensions when IF Option is specified

** Height is 5.875" with LEL option