orLED™

SUPPLEMENTARY LIGHTING FOR OPERATING ROOMS

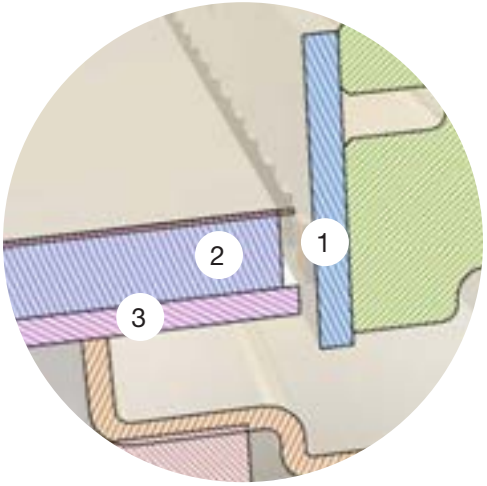
clear-vu lighting

orLED™ sets new standards for operating room supplementary lighting systems

- Edge-lit LED optics eliminates glare and minimizes shadows
- Innovative housing design maximizes LED performance/longevity and minimizes contamination
- Fully listed and certified for surgical suite sanitation, leakage, RFI and hazardous location requirements
- Optional 405nm LED disinfecting technology kills bacteria – see inside back cover

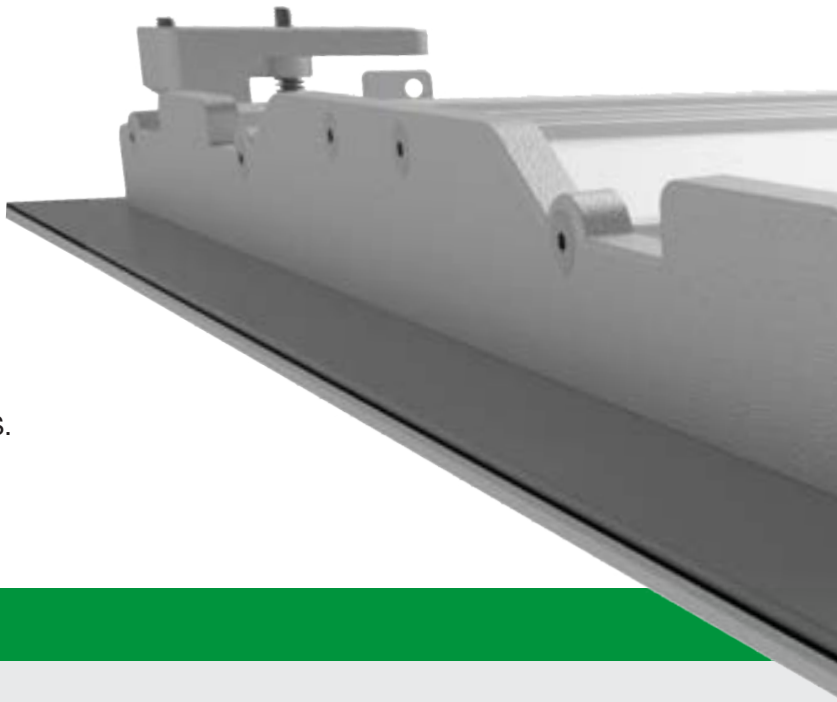
Edge-Lit LED Optics

orLED's edge-lit optical system eliminates direct glare and minimizes shadows. The illustration demonstrates that the LEDs (1) are not visible from normal viewing angles eliminating direct glare and minimizes shadows. The light guide plate (2) channels the light through the plate that is etched with a pattern that captures and directs the light through a diffuser (3) into wide uniform controlled distributions of light.



Low-Profile Housing

The low-profile orLED housing (<2.0”) is designed to maximize thermal conductivity of heat away from the junction points of the LEDs. Three factors impact the effectiveness of the thermal conductivity – material, mass and surface area. The choice of aluminum over CRS increases thermal conductivity at least 300%. In order to maximize mass the housing is extruded with thicknesses >.20” compared to .048” thickness of 18-gauge CRS. Adding fins to the extrusion profile increases the surface area by 70% over 18-gauge CRS.



Environmental Challenges of Operating Room Lighting

In addition to meeting all of the lighting and mechanical challenges of operating room lighting, orLED is listed and certified to meet all environmental challenges – leakage, contamination, corrosion, toxicity, cleanability, electromagnetic interference and energy efficiency.

orLED is IP66 rated to assure that pathogens and particulates will not enter or pass through the lighting fixture. IP66 is the highest level of dust and moisture protection without entering the categories for submersible lighting fixtures.

NSF/ANSI 2 Splash Zone is a listing that addresses materials, design and construction as it relates to ease of cleanability, corrosion resistance and toxicity. orLED is constructed from stainless steel and aluminum and is impervious to corrosion. The enclosure has been designed to produce a progressive surface with the ceiling structure to promote ease of cleanability. The construction of the enclosure is robust and will withstand the most aggressive cleaning protocols.

Electronic equipment in operating rooms must be protected from radiated and conducted emissions that might compromise the patient, surgical procedures and imaging operations. “Military Standard 461F-Air Force/Navy Fixed” testing procedures provide tangible proof that orLED will operate within ranges (RE and CE) that are safe for operating rooms.

orLED 2x4 luminaires are Design Lights Consortium Qualified - DLC qualified. DLC qualified is a prerequisite for most utility rebate programs. According to DLC, “When you purchase a product with DLC certification you can rest assured that you’ve chosen a highly scrutinized product that has been produced to some of the highest industry standards for quality and efficiency.”

Illumination Challenges

Supplementary lighting systems for operating room application provides illumination for three tasks:

Preparation for surgery

Balance lighting during surgery

Clean-up after surgery

Lighting Levels

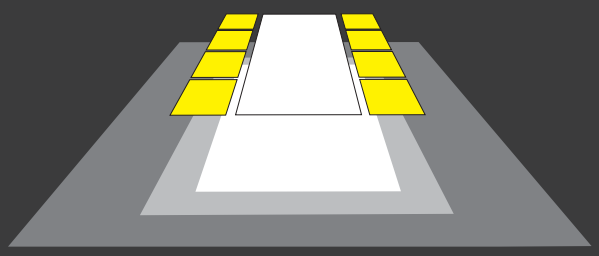
IES recommended lighting levels for operating rooms fall into 3 zones:

ZONE	LOCATION	FOOTCANDLES
1	Operating Table	200 – 300
2	Surgical Team Area	100 – 125
3	Operating Room Perimeter	40 – 60

These IES recommendations address correct task lighting and uniformity levels for operating room application. Correct lighting levels promote high surgical performance and maximum uniformity reduces eye fatigue.

LIGHTING CONFIGURATIONS

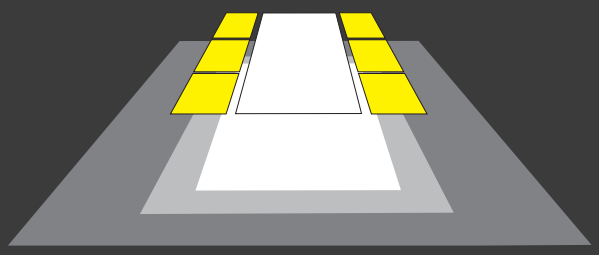
9’ CEILING • 90/60/20 • .9LLF MAINTENANCE FACTOR • 30” OFF FLOOR



2x4

Eight ORF24-VH1-C-UV-HAL-LFSS304-CIA-NB

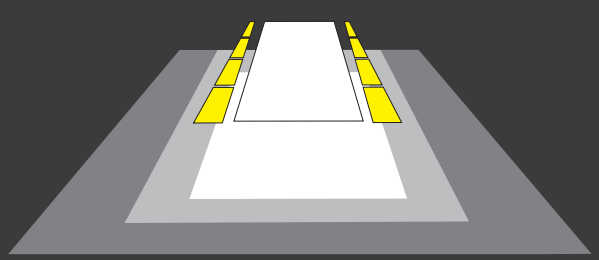
74	104	136	176	199	216	221	220	214	193	163	123	98
79	112	148	195	221	241	247	245	239	214	181	134	105
89	128	171	227	258	282	288	286	278	249	210	154	120
93	136	182	242	276	302	308	307	298	267	224	164	127
98	145	195	260	297	325	332	330	321	286	240	175	134
102	150	202	269	308	336	344	342	332	296	249	181	139
107	157	211	281	322	351	359	357	347	310	260	190	145
109	160	215	287	328	358	366	364	353	315	265	193	148
110	162	217	289	331	362	370	368	356	318	267	195	150
111	163	219	291	333	363	372	370	359	320	269	196	151
111	163	220	292	334	365	373	371	360	322	270	197	152
111	163	219	291	333	364	372	370	359	321	269	196	151
110	162	218	290	331	362	370	368	357	319	268	195	150
109	160	215	287	328	358	366	364	353	315	265	193	148
105	155	208	277	331	347	355	353	342	305	256	186	143
102	150	203	270	328	338	345	343	333	297	250	182	139
98	144	193	257	317	321	328	326	317	283	238	173	133
94	137	184	244	309	305	311	310	301	269	226	165	127
85	123	164	217	294	270	276	274	266	238	201	148	115
79	113	150	197	279	245	250	249	242	217	183	136	106
72	99	128	166	247	203	207	206	201	181	154	117	94
66	89	113	144	224	175	179	178	173	157	134	103	85



2x4

Six ORF24-VH1-C-UV-HAL-LFSS304-CIA-NB

48	62	76	93	102	110	113	112	109	100	87	70	60
54	72	91	115	128	139	142	141	138	125	107	84	70
59	81	104	133	149	163	167	165	161	145	124	95	77
69	98	129	169	192	209	213	212	206	185	158	117	92
75	109	145	192	219	239	245	243	236	211	179	131	102
83	124	168	225	259	283	289	288	279	248	209	150	114
88	133	181	244	281	308	315	313	304	270	227	162	122
95	145	197	267	308	337	344	343	332	295	248	176	132
98	150	205	277	320	35	358	356	345	307	257	183	136
100	154	210	286	330	362	369	367	356	316	265	187	140
101	154	212	287	333	364	372	370	358	318	266	189	141
100	153	209	284	328	359	367	365	354	314	263	186	139
97	149	204	277	320	351	358	356	345	307	257	182	136
93	141	193	262	302	330	337	335	325	289	243	172	129
89	134	182	246	283	310	316	315	305	272	228	163	123
80	119	160	215	247	269	275	274	266	237	199	143	109
74	108	144	191	219	239	244	243	236	211	178	129	100
65	91	119	156	177	192	196	195	190	170	145	108	86
59	80	103	132	149	162	165	164	160	144	124	94	76
49	64	100	100	111	120	123	122	119	108	93	74	62
43	55	83	83	92	99	101	101	98	90	78	63	54
38	47	66	66	71	76	78	78	76	70	62	52	46

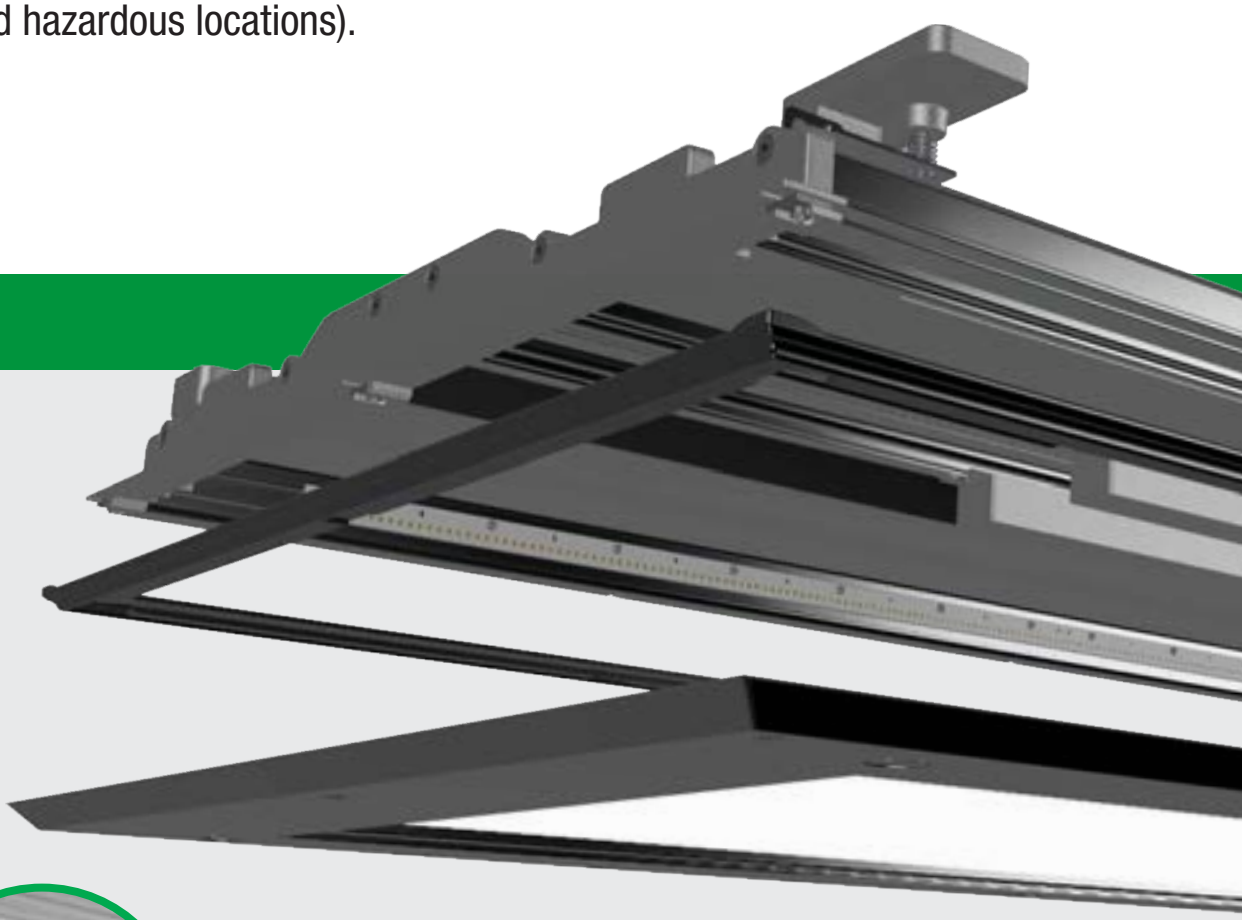


1x4

ORF14-H1-C-UV-HAL-LFSS304-CIA-NB

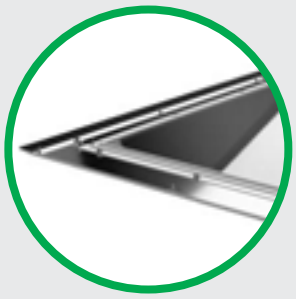
61	79	101	114	124	126	126	123	111	95	72	58
67	88	115	131	142	145	144	141	127	108	80	63
80	106	141	161	175	179	178	173	158	132	96	74
87	116	156	180	195	199	198	193	173	146	105	80
96	130	177	204	222	226	225	219	196	164	117	88
102	138	188	217	236	240	239	233	208	174	124	93
108	147	201	232	253	257	256	250	223	186	132	99
111	152	207	239	260	265	264	257	229	192	136	102
114	155	212	245	267	272	271	264	235	197	139	104
115	157	214	248	270	275	274	266	237	199	141	105
116	158	215	249	271	276	275	267	238	200	141	106
115	157	214	248	270	275	274	266	237	199	141	105
113	154	211	244	265	270	269	262	233	196	138	104
111	151	207	238	260	264	264	256	229	192	135	101
106	144	196	227	247	251	250	244	217	182	129	97
101	138	187	216	236	240	239	233	208	174	123	93
93	126	170	196	214	217	217	211	188	158	113	86
86	116	156	179	195	198	197	192	172	145	104	80
74	98	130	149	162	165	164	160	144	122	89	69
66	87	114	129	140	143	142	139	125	106	79	62
56	71	91	102	110	112	112	109	99	85	66	54

orLED™, the first LED supplementary operating room lighting series designed from the ground up to maximize the benefits of LED technology, interfaces with new contemporary ceiling systems and meets all the listing and certification requirements related to contamination (leakage, cleanability, corrosion, toxicity, electromagnetic interference and hazardous locations).



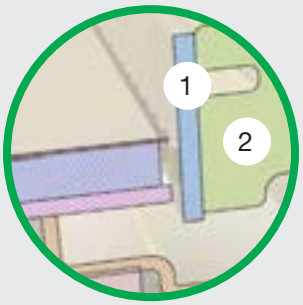
LENS FRAME

The stainless steel lens frame corners are die-formed and trimmed rather than notched and seam welded. Eliminating welded corners avoids destroying the chromium content and compromising the corrosion resistance of the stainless steel. Additionally, the lens frames fasteners close proximity to the lens frame perimeter avoids cantilevering and promotes ceiling contact.



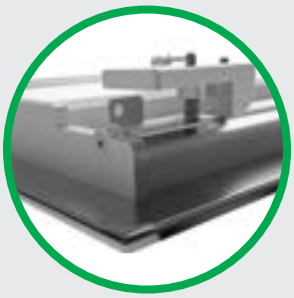
IMPACT RESISTANT LENS

The clear impact-resistant lens is silicone sealed and securely held in place with continuous lens retention brackets with mitered corners.



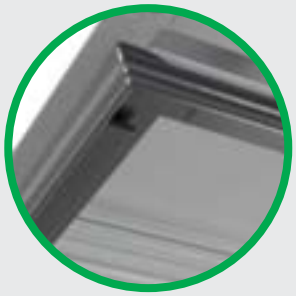
LED MODULES

The LED modules (1) are secured to a heavy gauge extruded aluminum heat sink housing (2). The thermal benefits of the aluminum heat sink housing promote LED efficiency and longevity.



LOW-PROFILE HOUSING

The low-profile housing (<2.0”) with patented swing-out arm installation mechanism allows universal installation in traditional gypsum, 2.0” walkable ceiling panels and 2.0” T-bar grid ceiling systems without opening the fixture – dramatically reducing installation costs.



GASKET

The patented one-piece injection molded closed cell silicone gasket provides a consistent custom fit between the ceiling/housing flange/ lens frame, eliminates potential failure of vulcanized corners, and produces maximum seal with minimum compression.

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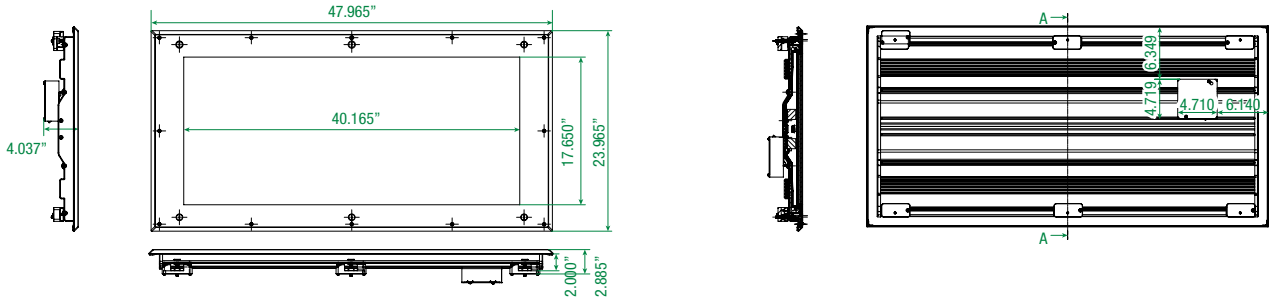
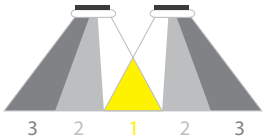
FOR RECESSED FLANGE OR 2.0" T-BAR GRID 2X4

DIMENSIONAL DATA – Housing requires a ceiling cutout of 21.75" x 45.75"



PHOTOMETRICS

Height of Room	9.000 ft
Mounting Height	9.000 ft
Light Loss Factor	0.80
Reflectances	90/60/20
Maintenance Factor	.9LLF



ZONE	Footcandles
1	200 – 300
2	100 – 125
3	40 – 60

48	62	76	93	102	110	113	112	109	100	87	70	60
54	72	91	115	128	139	142	141	138	125	107	84	70
59	81	104	133	149	163	167	165	161	145	124	95	77
69	98	129	169	192	209	213	212	206	185	158	117	92
75	109	145	192	219	239	245	243	236	211	179	131	102
83	124	168	225	259	283	289	288	279	248	209	150	114
88	133	181	244	281	308	315	313	304	270	227	162	122
95	145	197	267	308	337	344	343	332	295	248	176	132
98	150	205	277	320	35	358	356	345	307	257	183	136
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101	154	212	287	333	364	372	370	358	318	266	189	141
100	153	209	284	328	359	367	365	354	314	263	186	139
97	149	204	277	320	351	358	356	345	307	257	182	136
93	141	193	262	302	330	337	335	325	289	243	172	129
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80	119	160	215	247	269	275	274	266	237	199	143	109
74	108	144	191	219	239	244	243	236	211	178	129	100
65	91	119	156	177	192	196	195	190	170	145	108	86
59	80	103	132	149	162	165	164	160	144	124	94	76
49	64	100	100	111	120	123	122	119	108	93	74	62
43	55	83	83	92	99	101	101	98	90	78	63	54
38	47	66	66	71	76	78	78	76	70	62	52	46

SPECIFICATIONS

Housing: Low-profile (2.0") extruded aluminum housing with die-cast aluminum end caps. Extrusion profile produces internal heat sink and external heat fins to conduct/dissipate heat away from LED junction point to the housing exterior.

Lens Frame: One-piece, deep-draw fabricated Type 304 or Type 316 stainless steel lens frame free of surface welding. 60° beveled edge produces a progressive surface with the ceiling.

Optics: Edge lit LED optics. Light guide panel provides even facial illuminates and eliminates glare. Available in 3500K, 4000K, 5000K and Green. >90CRI.

Electrical: 100-277 VAC integral high efficiency driver and power supply (>0.90 power factor). Dimmable (0-10V) 1100 Lumens Flash 90-minute battery back-up (regular and Class I, Division 2).

Installation: Hermetically sealed wire-way with integral junction box – back of housing. Integral J-Box for all other applications – see Dimensional Data. Designed for universal installation – 2.0 T-Bar grid, modular ceiling panel (2"-3") and stick-built gypsum ceilings. Wiring and installation does not require removal of lens frame.

Listings, Ratings, Certifications and Protocols:
IIP66 (IEC60598); NSF/ANSI 2 (Splash Zone); MIL STD 461F Air Force/Navy fixed (RE and CE); LM79; LM80. Optional Hazardous Locations (Class I, Division 2).

ORDERING INFORMATION

SERIES		LIGHT ENGINE		COLOR TEMP.		VOLTAGE		HOUSING		LENS FRAME		LENS		BACKUP		CERTS
CLF24	–		–		–	UV	–	HAL	–		–		–		–	

CLF24= cleanLED recessed flange or 2.0" T-bar grid 2x4

S1*= 60 W/ 6,600 lm
M1*= 76 W/ 8,200 lm
H1= 100 W/ 10,700 lm
VH1= 160 W/ 15,400 lm

W= 3,500K
N= 4,000K
C= 5,000K
A= Amber UV Filtering
Y= Yellow 101

UV= Universal Voltage (100-277 VAC)

HAL= Extruded aluminum with die-cast end caps

LFSS304= 18-gauge Type 304 Stainless Steel
LFSS316= 18-gauge Type 316 Stainless Steel

CTG= .125" Clear Tempered Glass
CIA= .125" Clear Impact Acrylic

NB= No Backup
IBB= Integral Battery Back-up
HBB= Class I, Div 2 Battery Backup

MS= MIL STD 461F
C1D2= Class I, Div 2
C2D2= Class II, Div 2

All lumens at steady state room temp
**Battery backup available*

PROJECT INFORMATION

Project Name/Location _____

Fixture Type _____

Fixture Quantity _____

Catalog Number _____

clear-vu lighting

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