Metalux

DESCRIPTION

GRLED is a recessed lensed troffer series which offers a high quality luminaire designed with the latest solid state lighting and electronic driver technology for optimal performance and energy efficiency. The GRLED is compatible with all of today's popular ceiling systems and is available with a number of shielding options and accessories for application versatility.

The GRLED series features efficiency, quality and performance. The series is an excellent choice for use in a variety of indoor spaces such as offices, schools, residential, hospitals or retail merchandising areas.

Catalog #		**Type**
Project		
Comments		**Date**
Prepared by		

24GR LED
LED

2' X 4' LED TROFFER

General Recessed LED Troffer
For Use in Insulated Ceilings

Connected Systems CLICK HERE

SPECIFICATION FEATURES

Construction
Rigid housing is die formed of code gauge prime cold rolled steel and features full length die-formed stiffeners and unibody endplate for added strength. Side flanges are hemmed for safe handling. Innovative design provides superior lens brightness, uniformity and visual comfort. Unibody endplates are securely attached with interlocking tabs and screws. Four auxiliary fixture end suspension points provided. Endplates have integral Grid-lock feature for safety and convenience. Drivers and internal components are accessible from below the ceiling and LED modules include plug-in low voltage connectors.

Controls
Metalux LED luminaires come standard with 0-10V dimming driver (10% standard, 1% optional).

Options compatible with Eaton's Connected Lighting Systems:

- WaveLinx sensor
- LumaWatt Pro sensor
- SVPD sensor
- DLVP sensor and driver
- Fifth Light DALI driver

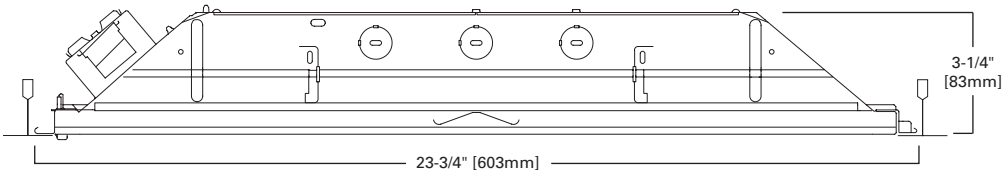
Other options include step-dimming and 3rd party drivers. Refer to the Connected Lighting options page and ordering information for more details.

Electrical
Long-Life LED system coupled with electrical driver to deliver optimal performance. LED's available in 3000K, 3500K, 4000K or 5000K with a minimum of 80 CRI. TM21 rating up to L89 >60,000 hours. Electronic drivers are cULus recognized and available for 120-277V and 347V applications. Standard dimming is 0-10V to 10% with 1%, step and Fifth Light DALI dimming options available. Color Tuning options available with Eaton's VividTune.

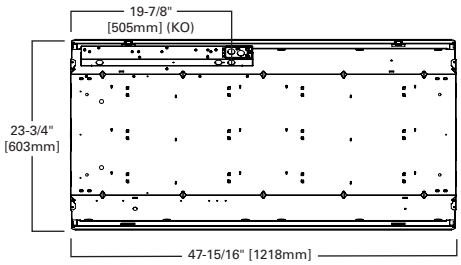
Emergency Battery Pack Option
Optional 120V-277V integral emergency battery pack is available in 7-watts or 14-watts to meet critical life-safety lighting requirements. The 90-minute batteries provide constant power to the LED system, ensuring code-compliance. A test switch/indicator button can be tested safely from the ground using a laser pointer, while the patented EZ Key prevents accidental discharge of the battery during construction. Emergency/generator transfer options available – see ordering information for details.

Frame/Optical Shielding
Die formed, flat steel door with frosted #12 pattern acrylic prismatic lens offering the balance of rigidity and light stability. Primary stocking skus come standard with robust .095 lens with other options available for maximum versatility.

Compliance
Modules are UL recognized components and indoor luminaires are cULus listed for 25°C ambient environments. Fixtures are suitable for direct insulation contact and are damp location listed. RoHS compliant. LED components comply with IESNA LM-79 and LM-80 standards. DesignLights Consortium® Qualified and classified for both DLC Standard and DLC Premium, refer to www.designlights.org for details.



MOUNTING DATA

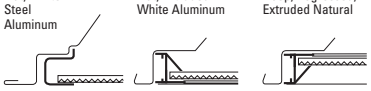


DOOR FRAMES

GR
Flat, White Steel Aluminum

GRFA
Flat, Extruded White Aluminum

GRRA
Deep, Regressed, Extruded Natural

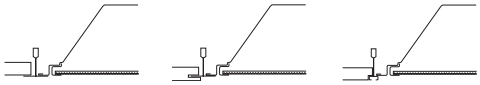


CEILING COMPATIBILITY

G
Grid/Lay-in Standard

G
Concealed T

G
Slot Grid



Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G
Slot Grid	G

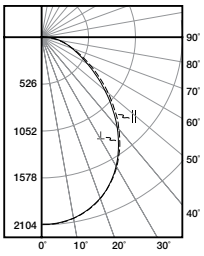
(Verify compatibility/ consult factory.)

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

PS519146EN
April 3, 2019 4:53 PM

Powering Business Worldwide

PHOTOMETRICS



24GR-LD5-48-F1-UNV-L835-CD1-U

Electronic Driver

Linear LED 3500K

Spacing criterion: (II) 1.19 x mounting height, (⊥) 1.18 x mounting height

Lumens: 4821

Input Watts: 37W

Efficacy: 128.6 lm/W

Test Report: 24GR-LD5-48-F1-UNV-L835-CD1-U.IES

Candlepower

Angle	Along II	45°	Across ⊥
0	2064	2064	2064
5	2061	2052	2057
10	2028	2019	2026
15	1972	1963	1968
20	1890	1879	1887
25	1779	1773	1774
30	1648	1638	1635
35	1493	1481	1467
40	1316	1299	1286
45	1128	1108	1087
50	946	921	893
55	767	740	717
60	606	574	563
65	468	437	440
70	349	329	344
75	256	243	265
80	172	168	190
85	95	90	105
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

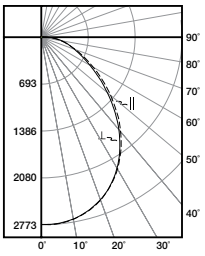
rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	105	101	97	107	103	99	96	98	95	93	94	92	90	91	89	87	85
2	100	92	86	80	98	90	85	80	87	82	78	84	80	76	81	77	74	72
3	92	82	74	68	89	80	73	67	77	71	66	75	69	65	72	68	64	62
4	85	73	65	58	82	72	64	58	69	63	57	67	61	57	65	60	56	54
5	78	66	57	51	76	65	57	51	63	56	50	61	55	50	59	54	49	47
6	72	60	51	45	71	59	51	45	57	50	44	55	49	44	54	48	44	42
7	67	54	46	40	66	54	46	40	52	45	40	51	44	39	49	44	39	37
8	63	50	42	36	61	49	41	36	48	41	36	47	40	36	46	40	35	33
9	59	46	38	33	58	45	38	33	44	37	32	43	37	32	42	36	32	30
10	55	43	35	30	54	42	35	30	41	34	30	40	34	29	39	33	29	28

Zonal Lumen Summary

Zone	Lumens	% Fixture
0-30	1564	32.4
0-40	2486	51.6
0-60	4001	83.1
0-90	4821	100.0
0-180	4821	100.0

Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	2444	2401	2355
55	2048	1977	1915
65	1697	1584	1595
75	1517	1439	1571
85	1671	1580	1842



24GR-LD5-64-F1-UNV-L835-CD1-U

Electronic Driver

Linear LED 3500K

Spacing criterion: (II) 1.19 x mounting height, (⊥) 1.18 x mounting height

Lumens: 6462

Input Watts: 48W

Efficacy: 134.2 lm/W

Test Report: 24GR-LD5-64-F1-UNV-L835-CD1-U.IES

Candlepower

Angle	Along II	45°	Across ⊥
0	2767	2767	2767
5	2763	2750	2758
10	2718	2706	2716
15	2643	2631	2637
20	2534	2519	2529
25	2384	2376	2378
30	2209	2196	2192
35	2001	1985	1967
40	1764	1741	1724
45	1512	1486	1458
50	1267	1234	1198
55	1028	992	961
60	812	769	755
65	627	586	590
70	467	440	461
75	344	326	356
80	231	225	254
85	128	121	141
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	105	101	97	107	103	99	96	98	95	93	94	92	90	91	89	87	85
2	100	92	86	80	98	90	85	80	87	82	78	84	80	76	81	77	74	72
3	92	82	74	68	89	80	73	67	77	71	66	75	69	65	72	68	64	62
4	85	73	65	58	82	72	64	58	69	63	57	67	61	57	65	60	56	54
5	78	66	57	51	76	65	57	51	63	56	50	61	55	50	59	54	49	47
6	72	60	51	45	71	59	51	45	57	50	44	55	49	44	54	48	44	42
7	67	54	46	40	66	54	46	40	52	45	40	51	44	39	49	44	39	37
8	63	50	42	36	61	49	41	36	48	41	36	47	40	36	46	40	35	33
9	59	46	38	33	58	45	38	33	44	37	32	43	37	32	42	36	32	30
10	55	43	35	30	54	42	35	30	41	34	30	40	34	29	39	33	29	28

Zonal Lumen Summary

Zone	Lumens	% Fixture
0-30	2097	32.4
0-40	3333	51.6
0-60	5370	83.1
0-90	6462	100.0
0-180	6462	100.0

Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	3276	3218	3157
55	2746	2650	2567
65	2275	2123	2138
75	2034	1928	2105
85	2241	2119	2469

ENERGY AND PERFORMANCE DATA BY CATALOG NUMBER

Stock or MTO*	Catalog Logic	Delivered Lumens	Watts	Efficacy (LPW)
MTO	24GR-LD5-30-F1-UNV-L835-CD1-U	3074	23.4	131
MTO	24GR-LD5-34-F1-UNV-L835-CD1-U	3459	26.7	129
Stock	24GR-LD5-38-F1-UNV-L835-CD1-U	3880	30.6	127
MTO	24GR-LD5-42-F1-UNV-L835-CD1-U	4294	34.6	124
Stock	24GR-LD5-48-F1-UNV-L835-CD1-U	4821	37.4	129
MTO	24GR-LD5-56-F1-UNV-L835-CD1-U	5618	45.1	124
Stock	24GR-LD5-64-F1-UNV-L835-CD1-U	6462	48.1	134
MTO	24GR-LD5-72-F1-UNV-L835-CD1-U	7257	56.0	129
MTO	24GR-LD5-85-F1-UNV-L835-CD1-U	8567	70.3	122
MTO	24GR-LD5-90-F1-UNV-L835-CD1-U	9092	69.1	132
MTO	24GR-LD5-100-F1-UNV-L835-CD2-U	10030	71.7	140
MTO	24GR-LD5-120-F1-UNV-L835-CD2-U	12260	90.1	136
MTO	24GR-LD5-130-F1-UNV-L835-CD2-U	13290	90.2	134
MTO	24GR-LD5-150-F1-UNV-L835-CD2-U	15340	120.3	128
MTO	24GR-LD5-180-F1-UNV-L835-CD2-U	18050	144.2	125

*Stocked in 3500K and 4000K others are MTO.

LENS TABLE

Approximate Lumen Multiplier	
F1	1.0
F125	1.0
A125	1.01
A	1.01
A19/156	.975
FGW080	.85

CCT TABLE

Approximate Color Temperature Multiplier	
5000K	1.016
4000K	1.016
3500K	1.0
3000K	.982
2700K	.930

ORDERING INFORMATION

SAMPLE NUMBER: 24GR-LD5-48-F1-UNV-L835-CD1-U

Rating
[Blank]=Standard
ATW-SW4=Chicago Rated

Width / Length
24=2' x 4'

Trim Type
G=Grid/Lay-in (Standard) [1]
G=Concealed T
G=Slot Grid

Series [13]
R=General Purpose Troffer

Door Frame
Standard=Flat White Steel Door (Leave Blank)
FA=Flush White Extruded Aluminum c/w Spring Latch
RA=Regressed White Extruded Aluminum
FAN=Flush Natural Anodized Extruded Aluminum
RAN=Regressed Natural Anodized Extruded Aluminum
FAB=Flush Black Extruded Aluminum
RAB=Regressed Black Extruded Aluminum
A/WG=Prismatic Acrylic Lens, Wireguard & Doorframe
F1/WG=Frosted Prismatic Acrylic Lens, Wireguard & Doorframe

LED Type
LD5=LED 5.0

LED Lumen Output [11]
30=3000 **100**=10000 [16]
34=3400 **120**=12000 [16]
38=3800 **130**=13000 [16]
42=4200 **150**=15000 [16]
48=4800 **180**=18000 [16]
56=5600
64=6400
72=7200
85=8500 [18]
90=9000 [16]

Shielding
F1=A12 .095 HP (Standard)
F125=A12 .125 HP
A=A12 .095
A125=A12 .125
A19/156=#19 Pattern Acrylic (.156" Thick) [16]
FGW080=Frosted Glazed Lens .080

Voltage [2]
347V=347 Volt [19]
UNV=Universal Voltage 120-277 [3]
48V=48 Volt Low-voltage (Class 2)

Options
GL=Single Element Fuse
GM=Double Element Fuse

Emergency
EL7W=7-watt, 120V-277V emergency battery pack installed [4]
EL14W=14-watt 120V-277V emergency battery pack installed [4]
ELV7W=7-watt, DLVP-compatible low voltage emergency battery pack installed [C]
ELV14W=14-watt DLVP-compatible low voltage emergency battery pack installed [C]
GTR2=Bodine Generator Transfer Relay [10]
ETRD=Iota Emergency Transfer Relay with dimming control [10]

CCT
L830=3000K
L835=3500K
L840=4000K
L850=5000K
L83050=80CRI 3000K-5000K White Tuning [17]
L93050=90CRI 3000K-5000K White Tuning [17]
L82765=80CRI 2700K-6500K White Tuning [17]
L92765=90CRI 2700K-6500K White Tuning [17]

Flex
A3/8-4/18GDIM=3/8" Flex with 0-10V Dimming Leads
Multiple other configurations available. See below for details.

Driver Type
CD=0-10V Dimming Driver (10%-100% Dimming) [9]
HCD=0-10V Dimming Driver (1%-100% Dimming) [9]
SR=Sensor-ready Dimming Driver for LWIPD1 option (1%-100% Dimming) [12], [B]
5LTD=Fifth Light DALI Driver (10%-100% Dimming) [8], [E]
5LTHD=Fifth Light Dimming Driver (1%-100% Dimming) [E]
LV1=DLVP Dimming Driver (0%-100% Dimming) [C]
SD=Step Dimming Driver (50% or 100% Dimming) [7]
LH=Lutron HiLume (LDE1 series) 1%-100% EcoSystem Driver with Soft-on Fade to Black dimming [F]
L5=Lutron 5 Series (LDE5-Series) 5%-100% EcoSystem Driver [F]
W2A=White Tuning, 2 ch, Intensity and CCT Control [17]

Number of Drivers
1=1 Driver
2=2 Drivers

Options
PAF=Painted After Fabrication
G1=Gasket, Door Frame and Housing
G2=G1 plus Gasket between Lens and Door
G3=G1 and G2 plus Gasketing on Mounting Surface of Fixture Trims [5], [6]
XFMR=Transformer [14]

Integrated Sensing Systems
SWPD1=WaveLinx Wireless Integrated Sensor [A]
LWIPD1=LumaWatt Pro Wireless Integrated Sensor [B]
LWTPD1=LumaWatt Pro Wireless Tile-mount Sensor [B]
SLVPD1=DLVP Low-voltage Integrated Sensor [C]
SVPD1=0-10V Stand-alone Integrated Sensor [D]

Packaging
U=Unit Pack
PAL=Job Pack, out of carton
PALC=Job Pack, in carton

Connected Systems CLICK HERE

ACCESSORIES

EQ-CLIP-U=T-BAR Safety Earthquake Clips [1]
DF-24-W=2' x 4' Drywall Frame Kit
ISHH-01=Programming Remote for Integrated Sensor [D]
ISHH-02=Personal Control Remote for Integrated Sensor [D]

NOTES: [1] An EQ Grid Clip is recommended for all 9/16" ceiling systems. [2] Products also available in non-US voltages and frequencies for international markets. [3] Not available when specifying emergencies, voltage must be specific. [4] With integral test switch/indicator/laser test. For approximate delivered lumens multiply the lumens per watt of the desired fixture by the wattage of the emergency battery pack (100 lm/W x 7=700 lumens). IES-format photometry for luminaire under emergency operation available. [5] Gasketing only available with aluminum door frame. [6] Gasketing minimum .125. [7] Step dimming (bi-level) 1 driver, 4200 - 10000, 2 driver, 12000 and up lumen model. [8] DALI available from 4200 - 9000 lumen models. Two drivers required for 10000 lumen models and up. [9] Requires two drivers for 10000 lumens and above. [10] Used to bypass local control during outage. Must be used in conjunction with UL 1008 device (provided by others). GTR2 option includes 2 relays on fixtures with dimming drivers. ETRD option only requires one relay when used on a dimming fixture. Must specify voltage as 120V or 277V when ordering these devices. [11] Nominal lumen output. See table for actual values [12] SR driver required for LWIPD1 only. PDR required for 120 lumens and up. [13] DesignLights Consortium® Qualified and classified for both DLC Standard and DLC Premium, refer to www.designlights.org for details. [14] XMFR required for 15000 lumens and up. [15] A19/156 lens creates holographic effect on the surface of the lens. [16] White tuning not available with this model. [17] White tuning provides correlated color temperatures (CCT) between 3000K (warm) to 5000K (cool) or 2700K (warm) to 6500K (cool). Must be used in conjunction with W2A. [18] The maximum lumens on this version with VividTune option will be 8300, see IES files for actual performance values. [19] 347V is not available with the W2A driver.

Integrated Sensing and Control System Options
NOTES: Integrated options must be used in conjunction with the associated system and may not be compatible with other options or accessories. Please refer to the following: [A] Consult WaveLinx system pages for additional details and compatibility. [B] Consult LumaWatt Pro system pages for additional details and compatibility. [C] Consult DLVP system pages for additional details and compatibility. [D] Consult SVPD series system pages for additional details and compatibility. [E] Consult Fifth Light system pages for additional details and compatibility. [F] Consult Marketplace Options - Lutron system pages for additional details and compatibility. Compatible only with driver series shown, and may require two or more drivers. Requires field commissioning to operate or dim. Contact Lutron at www.lutron.com.

Flexible Metal Conduit Options
Flex options available for 0-10V dimming control, DALI dimming control, emergency and night light functions. 72-inch factory-installed and pre-wired to driver, fitted to luminaire housing access plate with 90° enclosed FMC connector. Not all options may be combined and installation ratings vary by type.
A3/8-4/18GDIM series notes: Factory installed dimming option 3/8" flexible metal conduit with 2-#18 power and ground wires and 2-#18 UL-listed jacketed 0-10V +/- control wires. Meets UL 66, 83, 1479, 1569, 1581, 2556. NEC® 250.118, 300.22(C), 392, 396, 330, 501, 502, 503, 530, 504, 505, 518, 520, 530, 645, 72; Federal Specification A-A-59544 (formerly J-C-30B); all applicable OSHA and HUD Requirements. UL Classified 1-, 2-, and 3-hour through penetration with applicable fire stop product (not included). May be surface mounted, fished and/or embedded in plaster. Cable tray and approved raceway rated, install per NEC®; Environmental Air-Handling Space Installation per NEC® 300.22(C).

Specifications & dimensions subject to change without notice. Consult your Eaton Representative for availability and ordering information.

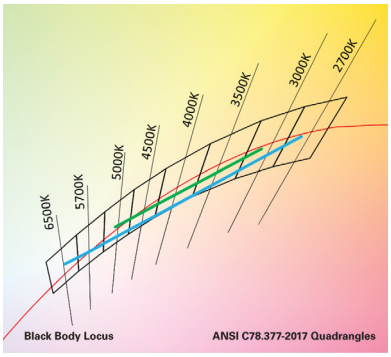
SHIPPING DATA

Catalog No.	Wt.	Pallet
24GR-LD5-48	20 lbs.	28

VividTune
color tuning solutions

24GR LED with VividTune Tunable White

VividTune tunable white luminaires from Eaton deliver high-quality light in a broad range of continuously variable color temperatures and intensities. Create a dynamic environment by adjusting the ambient light warmer or cooler to influence mood, support the task at hand, or create a dramatic ambience. The ability to control correlated color temperature and intensity separately using simple controls is the next evolution of LED lighting for the commercial, educational, healthcare and hospitality space. The unparalleled flexibility and number of available lighting environments enable users to find the right light with tunable white.



Performance Data*

Tunable White - Lumen Adjustment Factors (example only)

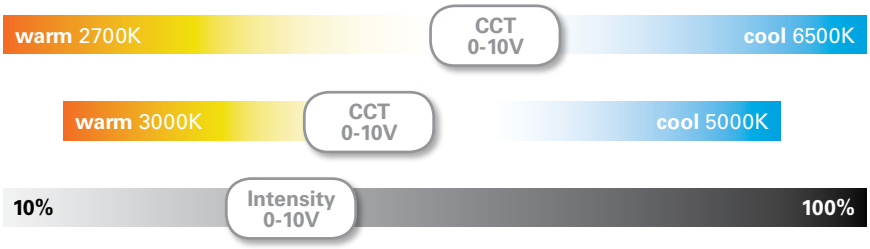
CCT	3000K-5000K		2700K-6500K	
	80 CRI	90 CRI	80 CRI	90 CRI
2700K	-	-	0.923	0.789
3000K	0.950	0.783	0.949	0.820
3500K	1.006	0.855	0.983	0.861
4000K	1.056	0.923	1.004	0.888
4500K	1.066	0.939	1.022	0.911
5000K	1.066	0.939	1.036	0.929
6500K	-	-	1.051	0.955

2' x 4' GRLED - Example of Approximate Lumen Calculation

	Standard Catalog #	VividTune 80 CRI Catalog #	VividTune 90 CRI Catalog #
CCT Setting	24GR-LD5-48-F1-UNV-L835-CD1-U	24GR-LD5-48-F1-UNV-L83050-W2A1-U	24GR-LD5-48-F1-UNV-L93050-W2A1-U
3000K	-	4582	3773
3500K	4821	4849	4122
4000K	-	5091	4451
4500K	-	5140	4529
5000K	-	5140	4529

Controlling VividTune Tunable White

VividTune luminaires make tunable white more accessible by using simple and familiar controls. From wall dimmers to wireless controls, VividTune tunable white luminaires are compatible with industry standard 0-10V dimming controls. A single 0-10V dimming input is used to control intensity (brightness) while a second 0-10V dimming input is used to adjust CCT. For suggested control configurations, go to www.eaton.com/lighting for tunable white application guides.



Example of Lumen Adjustment Calculation

24GR-LD5-48-F1-UNV-L83050-W2A1-U
at 80 CRI tuned to 3500K

Adjusted Lumen = published lm x adjusted lm factor

Adjusted Lumen = 4821 x 1.006

Adjusted Lumen = 4849 lm

** Lumen adjustment factors are for reference and may be different for each product selected. Refer to IES files for actual performance data on each.*

Eaton
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Peachtree City, GA 30269
P: 770-486-4800
www.eaton.com/lighting