

CLUSTER

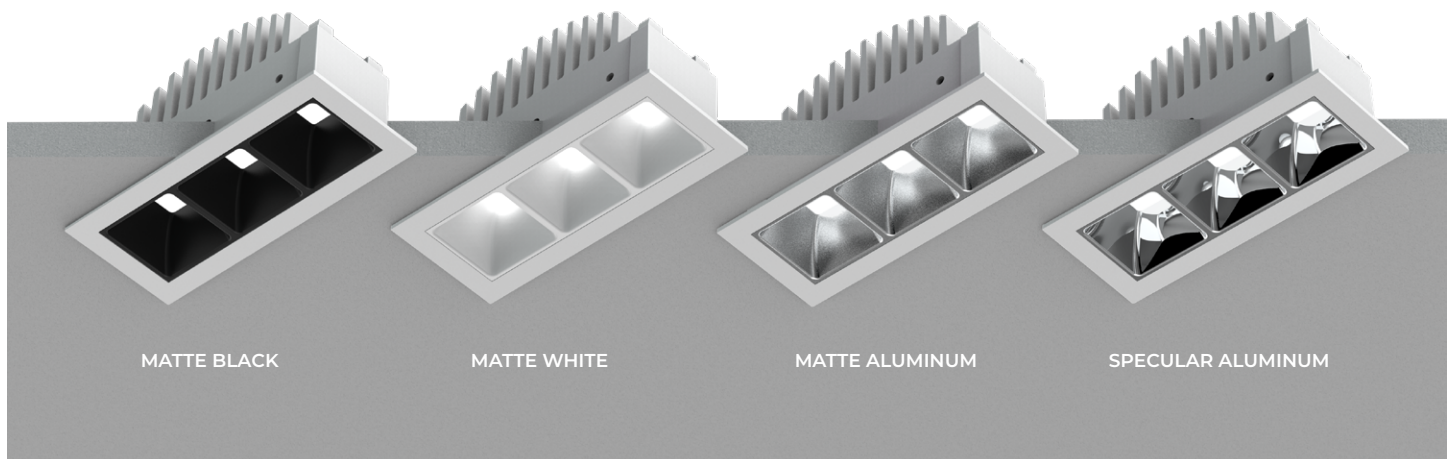
RECESSED LINEAR PARABOLIC

LUMENWERX

DESCRIPTION

Cluster is the precise, and scalable family of downlights, wall washers, and adjustables, available for recessed, pendant, and surface mounting. Based on a fundamental 1.2" square cell, Cluster delivers lighting that is optically sophisticated and aesthetically refined.

Cluster recessed linear parabolic downlights range from a single point to a 15 cell luminaire, all with precision optics that eliminate multiple shadows, as well as subtle louver treatments. Nominal light output is 200 lumens per cell. With our remote driver, Chromawerx DUO and SOLA are available for tunable white lighting control. All recessed Cluster can install in a variety of ceiling types and materials, with either an integral driver or a remote driver that is capable of powering multiple luminaires.

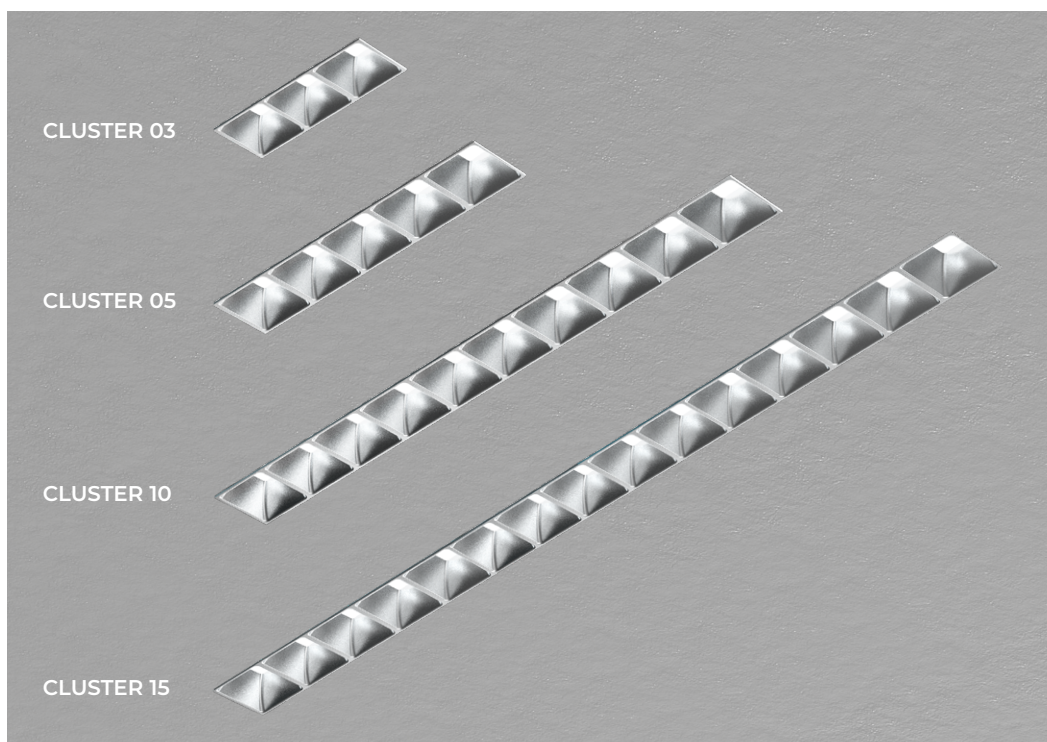


MATTE BLACK

MATTE WHITE

MATTE ALUMINUM

SPECULAR ALUMINUM



CLUSTER 03

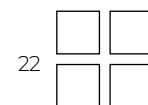
CLUSTER 05

CLUSTER 10

CLUSTER 15

OTHER AVAILABLE PLANAR SIZES

See planar spec sheet



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LUMENWERX

Project:

Type:

Order Guide

1. HOUSING

IC RATED

Mounting can be ordered separately.

LUMINAIRE ID	TRIM STYLE	LIGHT SOURCE	INSTALLATION TYPE	MOUNTING OPTION ²	DRIVER	VOLTAGE	LUMEN PACKAGE ⁵	DIMMING
CLU03RPAR - Cluster 3x1 Recessed Parabolic CLU05RPAR - Cluster 5x1 Recessed Parabolic CLU10RPAR - Cluster 10x1 Recessed Parabolic CLU15RPAR - Cluster 15x1 Recessed Parabolic	TRM - Flanged trim TLMP - Trimless drywall mudplate TLMW - Trimless millwork	SW - Static white SOLA ¹ - Dim-to -warm single channel control 35K to 22K DUO ¹ - Tunable white 2-channel control 65K to 27K ¹ Not available with integral driver option.	OF - Open Frame Type Non-IC IC - Type-IC RM - Remodel Type Non-IC CP - Chicago Plenum Type-IC (CCEA)	ASB ³ - Adjustable standard bar hangers FMB ³ - Flush mount bars ACB ³ - Adjustable commercial bar hangers AHC ³ - Adjustable hat channel bars NA - None ² See page 4 for more details. ³ Not available with RM installation type.	INTEGRAL ⁴ ⁴ Not available with CLU22RPAR.	120V - 120V 277V - 277V	CLU03RPAR - 584LM - 584 lm CLU05RPAR - 957LM - 957 lm CLU10RPAR - 1896LM - 1896 lm CLU15RPAR - 2844LM - 2844 lm ⁵ Lumen packages shown at 3500K, with SPL. For other, see lumen output multipliers on page 5.	D1 - 1% 0-10V ELV ⁶ - ELV 120V TRI ⁶ - TRIAC 120V ⁶ Available with 120V only.
					REMOTE	DO NOT SPECIFY FOR REMOTE. SEE "REMOTE DRIVER BOX" SECTION BELOW.		

2. LIGHT

LUMINAIRE ID	TRIM STYLE	LIGHT SOURCE	OPTIC	CRI	COLOR TEMPERATURE	TRIM FINISH ⁷	LOUVER FINISH
			PAR	90CRI			
CLU03RPARL - Cluster 3x1 Recessed Parabolic CLU05RPARL - Cluster 5x1 Recessed Parabolic CLU10RPARL - Cluster 10x1 Recessed Parabolic CLU15RPARL - Cluster 15x1 Recessed Parabolic	TRM - Flanged trim TLMP - Trimless drywall mudplate TLMW - Trimless millwork	SW - Static white SOLA - Dim-to -warm single channel control 35K to 22K DUO - Tunable white 2-channel control 65K to 27K	PAR - Parabolic	90CRI - 90 CRI	27K - 2700K 30K - 3000K 35K - 3500K 40K - 4000K 50K - 5000K SOLA - Dim-to -warm single channel control 35K to 22K DUO - Tunable white 2-channel control 65K to 27K	FTMW - Textured matte white FTMB - Textured matte black CF# - Custom finish, specify RAL# ⁷ Applicable for trim and trimless. Body finish matches trim finish.	MWPL - Matte White Parabolic Louver MBPL - Matte Black Parabolic Louver MPL - Matte Parabolic Louver SPL - Specular Parabolic Louver

3. REMOTE DRIVER BOX

Ordered separately. Specify each required remote driver box on a separate line.

REMOTE DRIVER ⁸	LUMINAIRE QTY. ⁹	LUMINAIRE ID	VOLTAGE	LUMEN PACKAGE ¹⁰				DIMMING ¹²	
RDB# - Remote driver box ⁸ Specify each required remote driver box on a separate line.	#X - Number of luminaires ⁹ Specify number (#) of luminaires per remote driver.	CLU03RPAR - Cluster 3x1 Recessed Parabolic CLU05RPAR - Cluster 5x1 Recessed Parabolic CLU10RPAR - Cluster 10x1 Recessed Parabolic CLU15RPAR - Cluster 15x1 Recessed Parabolic	120V - 120V 277V - 277V UNV - 120V-277V		Low ¹¹	Medium ¹¹	High	RD1 - 1% 0-10V RELV ¹³ - ELV 120V RTRI ¹³ - TRIAC 120V RDA ¹⁴ - DALI RLDE1 ¹⁴ - Lutron Hi-lume 1% Eco RELD1 - eldoLED 1% ECOdrive 0-10V RELD0 - eldoLED 0.1% SOLOdrive 0-10V	SOLA RSD1 - Single 0-10V input DUO RDMX ^{14, 15} - DMX RDDA ¹⁴ - DALI DT6 RDDA8 ¹⁴ - DALI DT8 RDD1 - Dual 0-10V input for CCT/Intensity RLD2 ¹⁴ - Lutron DALI-2 digital
				CLU03RPAR	200LM - 200 lm	365LM - 365 lm	584LM - 584 lm		
				CLU05RPAR	239LM - 239 lm	598LM - 598 lm	957LM - 957 lm		
				CLU10RPAR	474LM - 474 lm	1185LM - 1185 lm	1896LM - 1896 lm		
				CLU15RPAR	711LM - 711 lm	1778LM - 1778 lm	2844LM - 2844 lm		
				¹⁰ Watts and lumen per watts will vary based on the number of light units per remote driver as well as on the type of driver selected. ¹¹ Not available with RELV and RTRI dimming options.				¹² For configurations involving different cluster sizes on a remote driver, please consult factory. ¹³ Available with 120V only. ¹⁴ On-site commissioning is required. ¹⁵ To specify see pages 9 to 11.	

EXAMPLE CODE:
REMOTE DRIVER

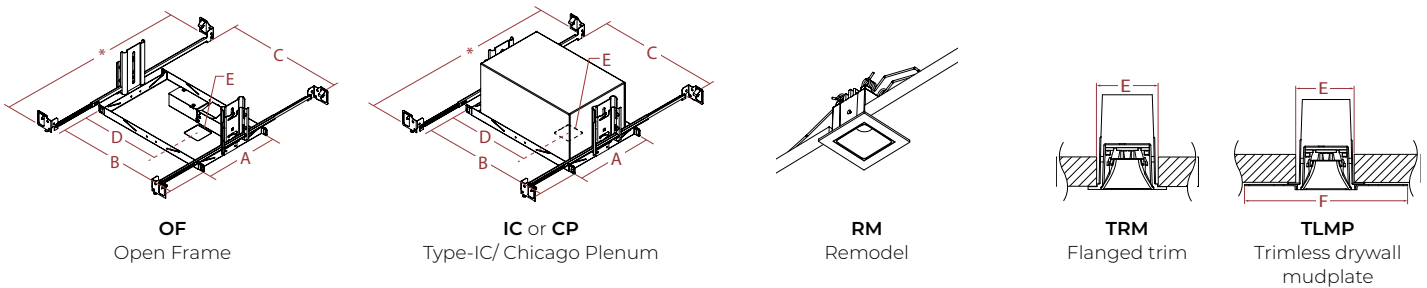
MOUNTING	CLU05RPAR-TRM-SW-OF-FMB-REMOTE	REMOTE DRIVER	RDB1-4X-CLU05RPAR-120V-598LM-RD1
LIGHT	CLU05RPARL-TRM-SW-PAR-90CRI-30K-FTMW-SPL		RDB2-2X-CLU05RPAR-120V-598LM-RD1

MOUNTING

Clusters can be installed in a wide range of ceiling conditions and with various ceiling trim options. Spring clips clamp the lighting unit to the mounting frame (or directly to the ceiling for remodel). Maximum ceiling thickness is 1.25".

INSTALLATION TYPE	MOUNTING OPTION ^{1,2}	TRIM TYPE
OF - Open Frame Type Non-IC IC - Type-IC RM - Remodel Type Non-IC CP - Chicago Plenum Type-IC (CCEA)	ASB - Adjustable standard bar hangers FMB - Flush mount bars ACB - Adjustable commercial bar hangers AHC - Adjustable hat channel bars NA - Not applicable ¹ For detailed mounting option dimensions, see page 4. ² Specify NA for remodel (RM) installation type.	TRM - Flanged trim TLMP - Trimless drywall mudplate TLMW - Trimless millwork

INSTALLATION TYPE ⁴

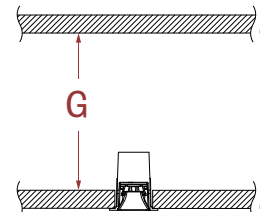


⁴ Drawings shown with adjustable standard bar hangers.

	A HOUSING WIDTH	B HOUSING LENGTH	C SPACING BETWEEN BARS	D DISTANCE FROM CUT-OUT	E CUT-OUT DIMENSIONS	F MUDPLATE DIMENSIONS
CLUR03	8 9/16"	13 5/16"	12 3/4"	5 3/8"	4" x 1 9/16"	6 5/16" x 3 29/32"
CLUR05	8 9/16"	13 5/16"	12 3/4"	6 5/8"	6 3/8" x 1 9/16"	8 11/16" x 3 29/32"
CLUR10	10 1/16"	19 5/16"	18 3/4"	10 5/8"	12 3/8" x 1 9/16"	14 11/16" x 3 29/32"
CLUR15	10 1/16"	25 5/16"	26 9/16"	12 1/16"	18 3/8" x 1 9/16"	20 11/16" x 3 29/32"

PLENUM CLEARANCE DIMENSIONS

	G PLENUM CLEARANCE HEIGHT			
	REMOTE & INTEGRAL		INTEGRAL	REMOTE
	OPEN FRAME	IC / CP	REMODEL	REMODEL
CLUR03	4 13/16"	5 3/8"	4 13/16"	2 5/32"
CLUR05	4 13/16"	5 3/8"	4"	2 5/32"
CLUR10	4 13/16"	5 3/8"	4"	2 5/32"
CLUR15	4 13/16"	5 3/8"	4"	2 5/32"

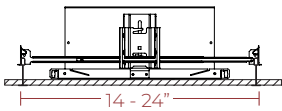


CLUSTER

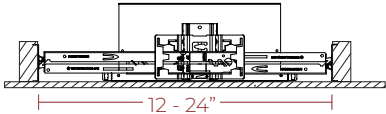
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LUMENWERX

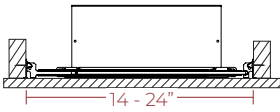
MOUNTING OPTIONS



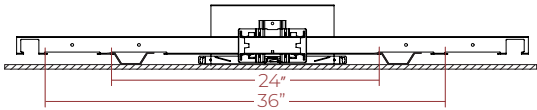
ASB - Adjustable standard bar hangers
Grid ceiling or drywall with variable height
(Commercial applications)



ACB - Adjustable commercial bar hangers
Grid ceiling, drywall, metal, wood, frame mounting
(Also openings for multiple hanging options such as hat channel, IC channel and metal tubing, supplied by others)



FMB - Flush mount bracket
Drywall/metal/wood frame mounting
(Residential applications)



AHC - Adjustable hat channel bars
With adjustable height

FIXTURE DIMENSIONS

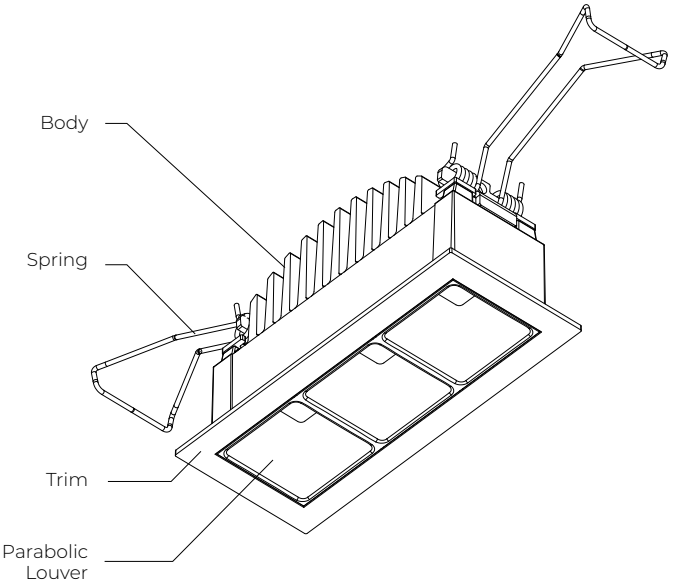
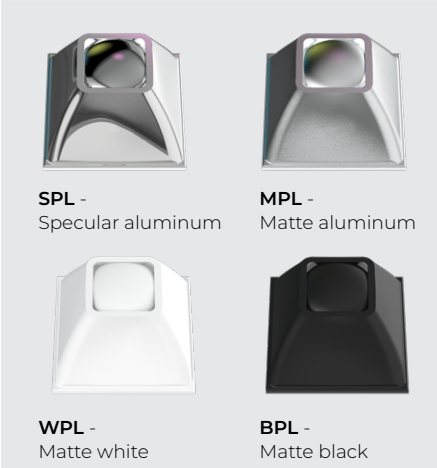
	BODY TYPE	
	TRM Flanged trim	TLMP Trimless drywall mudplate
CLURL03		
CLURL05		
CLURL10		
CLURL15		

LIGHT

OPTICS

LOUVER FINISH

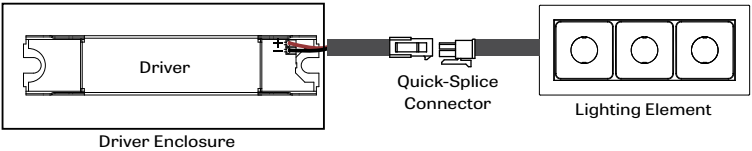
Louver is injection molded with integral texture and color



DRIVER

INTEGRAL DRIVER STATIC WHITE ONLY

The integral driver is sized to the lighting unit and is connected directly to it with Class 2 wiring and quick-splice connectors. The driver enclosure can be serviced through the ceiling by removing the lighting unit.



MULTIPLIER

LUMEN PACKAGE MULTIPLIER PER OPTIC

2700K				3000K				3500K				4000K			
SPL	MPL	BPL	WPL	SPL	MPL	BPL	WPL	SPL	MPL	BPL	WPL	SPL	MPL	BPL	WPL
0.94	0.81	0.58	0.94	0.97	0.83	0.6	0.97	1	0.86	0.62	1	1.02	0.88	0.63	1.02

LUMEN PACKAGE (AT 3500K, SPL) - INTEGRAL DRIVER

LUMINAIRE ID	LUMEN OUTPUT	WATTS	EFFICACY LM/W
CLUR03	584 lm	7.3 W	80 lm/W
CLUR05	957 lm	11.5 W	83 lm/W
CLUR10	1896 lm	23.2 W	82 lm/W
CLUR15	2844 lm	34.8 W	82 lm/W

LUMEN PACKAGE	VOLTAGE	INTEGRAL DRIVER
Use the multiplier tables to calculate the lumen package	120 - 120V 277 - 277V	D1 - 1% 0-10V ELV ¹ - ELV 120V TRI ¹ - TRIAC 120V ¹ Available with 120V only.



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REMOTE DRIVER STATIC WHITE, DUO & SOLA

The remote driver can power several lighting units, depending on their total power. The minimum and maximum number of lighting units and driver type are shown in the table below and must be observed. The remote driver and lighting units are wired together through connection boxes, which are furnished pre-wired to the driver enclosure. All wiring is Class 2 with quick-splice connectors. The remote driver requires access from above the ceiling (or an access panel).

OPTIC MULTIPLIER TABLE

SPL	MPL	BPL	WPL
1	0.853	0.606	0.996

LUMEN PACKAGE ¹ (AT 3500K, SPL) - REMOTE DRIVER

Use the optic multiplier table to calculate the lumen package for other optics

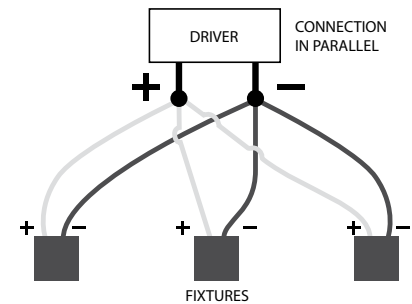
LUMINAIRE ID	LUMEN PACKAGE ²			VOLTAGE	REMOTE DRIVER	NUMBER OF LIGHTING UNITS PER DRIVER
CLUR03 CLUR05 CLUR10 CLUR15	LOW 200 lm ³	MEDIUM 365 lm ³	HIGH 584 lm	120 - 120V 277 - 277V UNV - 120V-277V	STATIC WHITE RD1 - 1% 0-10V RELV ⁴ - ELV 120V RTRI ⁴ - TRIAC 120V RDA ⁵ - DALI RLDEI ⁵ - Lutron Hi-lume 1% Eco	See table below for maximum and minimum possible number of lighting units per each driver. For configurations involving different cluster sizes on a remote driver, please consult factory.
	² Low and medium options are not available with RELV and RTRI. ³ Minimum of 3 fixtures per driver.				DUO RDMX ⁵ - DMX, to specify see pages 9 to 11 RDA ⁵ - DALI RDD1 - Dual 0-10V input for CCT/intensity SOLA RSD1 - Single 0-10V input	

¹ Watts and lumen per watts will vary based on the number of lighting units per remote driver as well as on the type of driver selected.

NUMBER OF LIGHTING UNITS PER DRIVER - MINIMUM AND MAXIMUM

DRIVER TYPE	CLUR03	CLUR05	CLUR10	CLUR15
SW				
D1 - 1% 0-10V	1-12	1-6	1-3	1-2
ELV - ELV 120V	1-4	1-2	1	1
TRI - TRIAC 120V	1-4	1-2	1	1
DA - DALI	2-11	1-6	1-3	1
LDE1 - Lutron Hi-lume 1% Eco	1-10	1-6	1-3	1-2
DUO				
DMX - DMX	3-6	2-4	1-2	1
DA - DALI	3-7	2-3	1	1
DD1 - Dual 0-10V input for CCT/Intensity	3-7	2-4	1-2	1
SOLA				
SD1 - Single 0-10V input	3-7	2-4	1-2	1

For any quantities of lighting units per driver that fall outside the minimum and maximum listed above, please consult factory.



Technical Specifications

OPTICS

PARABOLIC LOUVERS (SPL, MPL, WPL, BPL)

Parabolic louver optics provide excellent shielding and a pleasing crisp visual texture. The precisely molded louvers consist of 1" deep blades and side reflectors with shielding of 50° lengthwise and 45° cross wise.

The parabolic contour of the blades and side reflectors direct light into a comfortable downlight distribution with a spacing criterion of 1.1, while minimizing shadows from the LED array above each cell.

Four finishes are available. Specular aluminum (SPL) provides higher efficacy, sharper cut-off, and an ultra-quiet appearance at shallow viewing angles. matte aluminum (MPL) offers a softer appearance, a wider beam spread, and gentle brightness transition at cut-off. Matte white (WPL) creates the highest louver brightness, while matte black (BPL) provides a dark appearance with slightly reduced beam spread.

LIGHT SOURCE

Static White

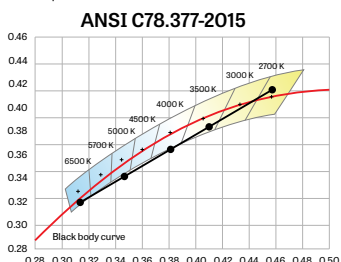
Custom array of mid-flux LEDs mounted onto aluminum-backed circuitry. Available in 2700K, 3000K, 3500K and 4000K with a minimum 90 CRI with elevated R9 value. Color consistency is maintained to within 3 SDCM. All LEDs have been tested in accordance with IESNA LM-80-08 and the results have shown L80 lumen maintenance greater than 60,000 hours. Absolute product photometry is measured and presented in accordance with IESNA LM-79, unless otherwise indicated.

Chromawerx SOLA

It is a single-channel control that dims output while warming the color temperature in a pre-determined relationship. A simple analog control sends a common signal to dual output digital drivers, which are programmed to adjust a specially populated LED array to emulate the effect of dimming a filament source. Dimming range is programmable but the default option runs from 3500K at 100% of full power to 2200K at 5% of full power. CRI is maintained above 80 throughout the dimming range.

Chromawerx DUO

It is a two-channel control. It uses an analog (0-10V) protocol for separate control of luminaire CCT and intensity or a digital (DMX, DALI) protocol for synchronous control of both warm and cool LED arrays to enable the user to set color temperature and light output. Commonly called "tunable white", Chromawerx two-channel control provides the range of cool (6500K) to warm (2700K) color that can be useful for helping to entrain circadian rhythms, stimulate alertness for improved educational and work productivity, and compensate for jet lag, among other applications. The Chromawerx drivers are programmed to limit maximum light output and power usage across all color temperatures. CRI is maintained above 80.



ELECTRICAL

SOLA

SD1

Factory-set, adjustable output current LED driver with universal (120-277VAC) input. Using a single 0-10V control signal, the light output warms in color temperature as it dims down to 1% and 2200K. At maximum driver load, efficiency < 86%, PF > 0.9, THD < 20%.

DUO

DMX

Factory-set, adjustable output current, multi-channel LED driver with universal (120-277VAC) input. Using DMX wall controls (optionally supplied by Lumenwerx) or an existing DMX control system, two channels of LEDs (warm-white & cool-white) are independently adjustable. Each DMX driver has multiple output channels that can be independently addressed at the factory or on-site using built-in RDM (Remote Device Management) functionality. Dimming range from 100%-0%. At maximum driver load, efficiency < 89%, PF > 0.9, THD < 20%.

DALI

Factory-set, adjustable output current LED driver with universal (120-277VAC) input. Using an existing DALI control system (supplied by others), one control channel adjusts the fixture color temperature, and the other control channel adjusts fixture brightness. Dimming range from 100%-0%. At maximum driver load, efficiency < 86%, PF > 0.9, THD < 20%.

DD1

Factory-set adjustable output current LED driver with universal (120-277VAC) input. Controlled via two individual 0-10V signals, one for setting light output down to a minimum of 1% and the other for adjusting the CCT (default range of 6500K-2700K). Rated life of 50,000 hours at 70°C maximum driver case temperature and 100% load conditions. Typical efficiency of 86%, PF > 0.9, THD < 20% at 100% load conditions.

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LUMENWERX

WEIGHT

	BODY		OPEN FRAME		TYPE-IC WITH CHICAGO PLENUM	
	Lb	Kg	Lb	Kg	Lb	Kg
CLUR03	0.70	0.30	2.30	1.04	5.34	2.42
CLUR05	1.10	0.50	2.50	1.13	5.35	2.43
CLUR10	2.00	0.90	3.49	1.58	7.99	3.62
CLUR15	3.00	1.36	4.10	1.87	9.90	4.50

CONSTRUCTION

- Housing** - Die-cast aluminum (0.95" nominal)
- Optics** - Polycarbonate
- Mounting frame** - 22 gauge galvanized sheet metal
- Driver housing** - 18 gauge galvanized sheet
- Mounting clips** - Ø1.0-1.4mm spring clips

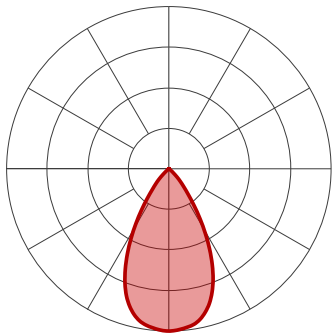
CERTIFICATIONS

- ETL** - Rated for indoor dry/damp locations. Conforms to UL 1598 Standard and certified to CAN/CSA Standard C22.2 No. 250.0
- Chicago plenum** - City of Chicago approved (CCEA) when specified with CP installation type option.
- IC rated** - Suitable for direct contact with insulation when specified with IC or CP installation type options.

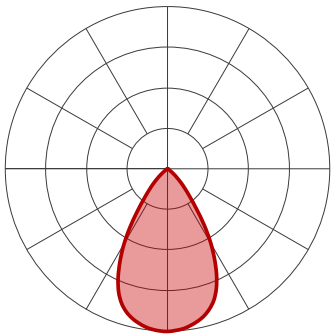
WARRANTY

Lumenwerx provides a five-year limited warranty on electrical and mechanical performance of the luminaires, including the LED boards, drivers, and auxiliary electronics. Lumenwerx will repair or replace defective luminaires or components at our discretion, provided they have been installed and operated in accordance with our specifications. Other limitations apply, please refer to the full warranty on our website.

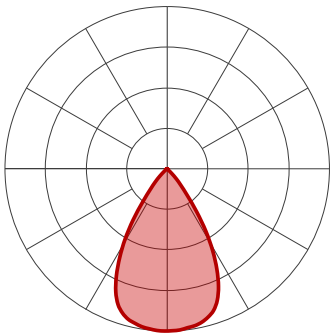
PARABOLIC LOUVERS



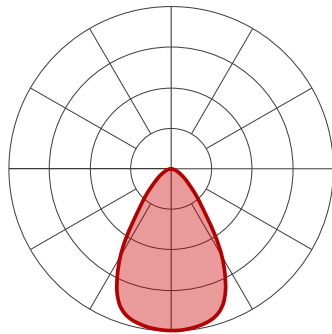
SPL - Specular parabolic louver



MPL - Matte parabolic louver



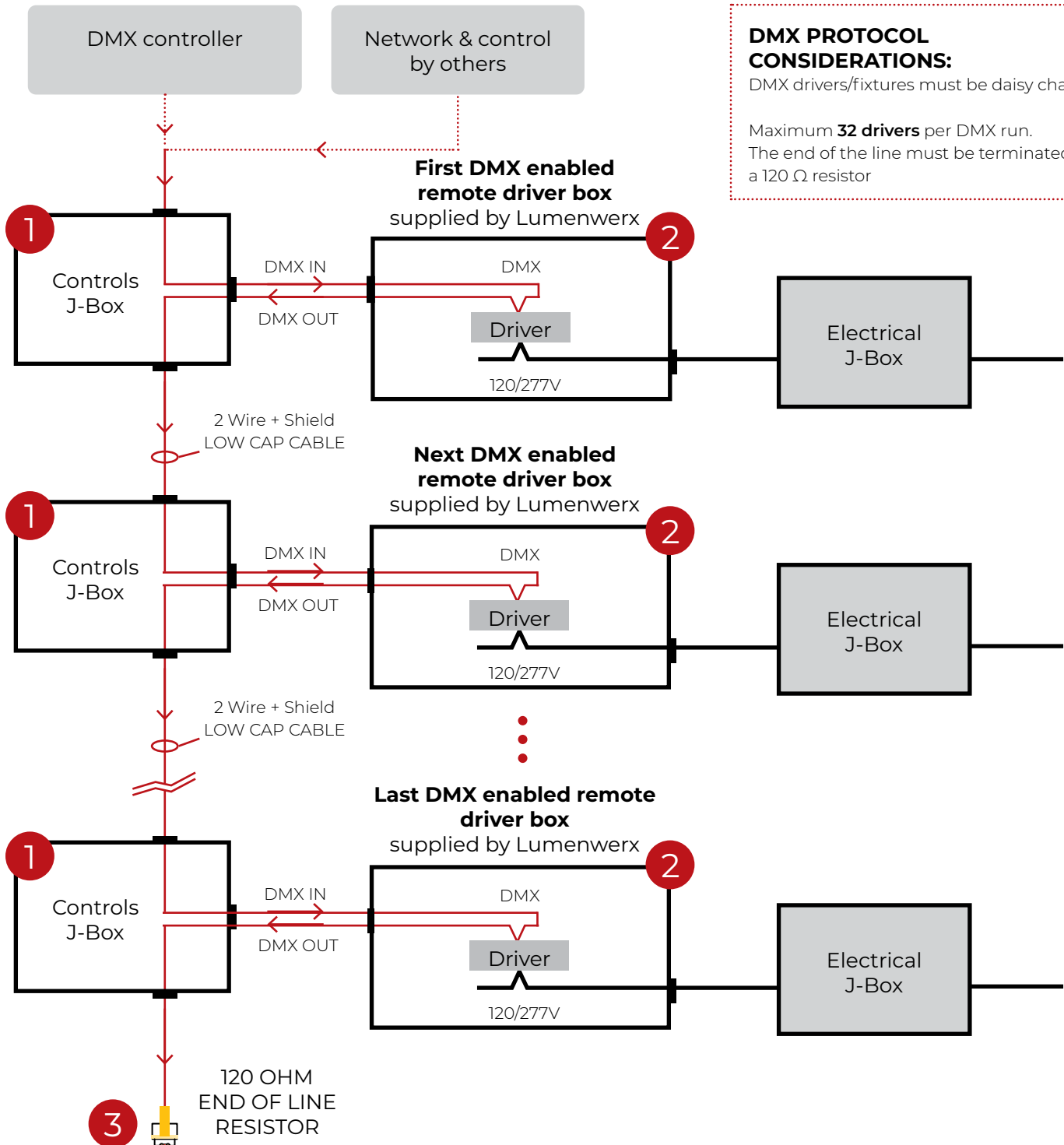
BPL - Black parabolic louver



WPL - White parabolic louver

DUO GENERIC DMX NETWORK ARCHITECTURE

A qualified DMX integrator is required to assure proper installation and commissioning of the DMX network. **When placing the PO, please provide the contact information of your DMX integrator.**

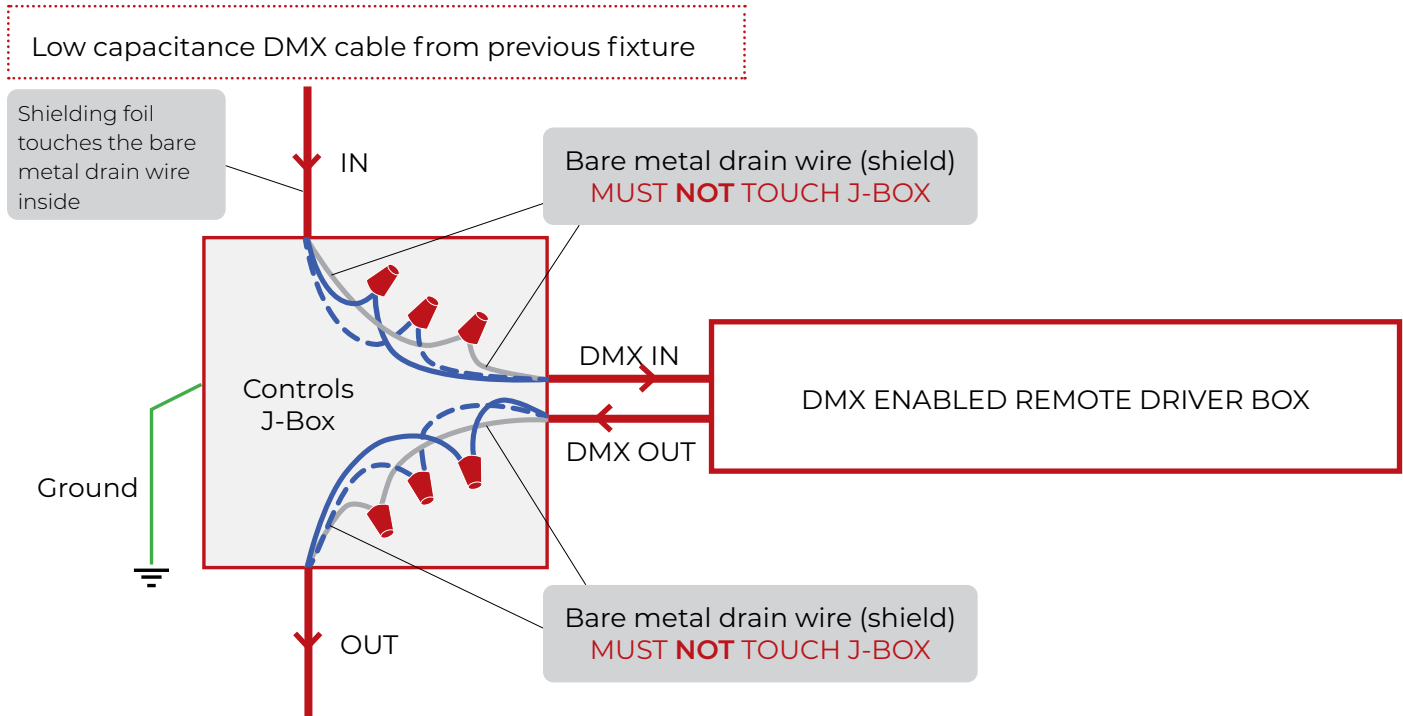


DMX PROTOCOL CONSIDERATIONS:

DMX drivers/fixtures must be daisy chained.

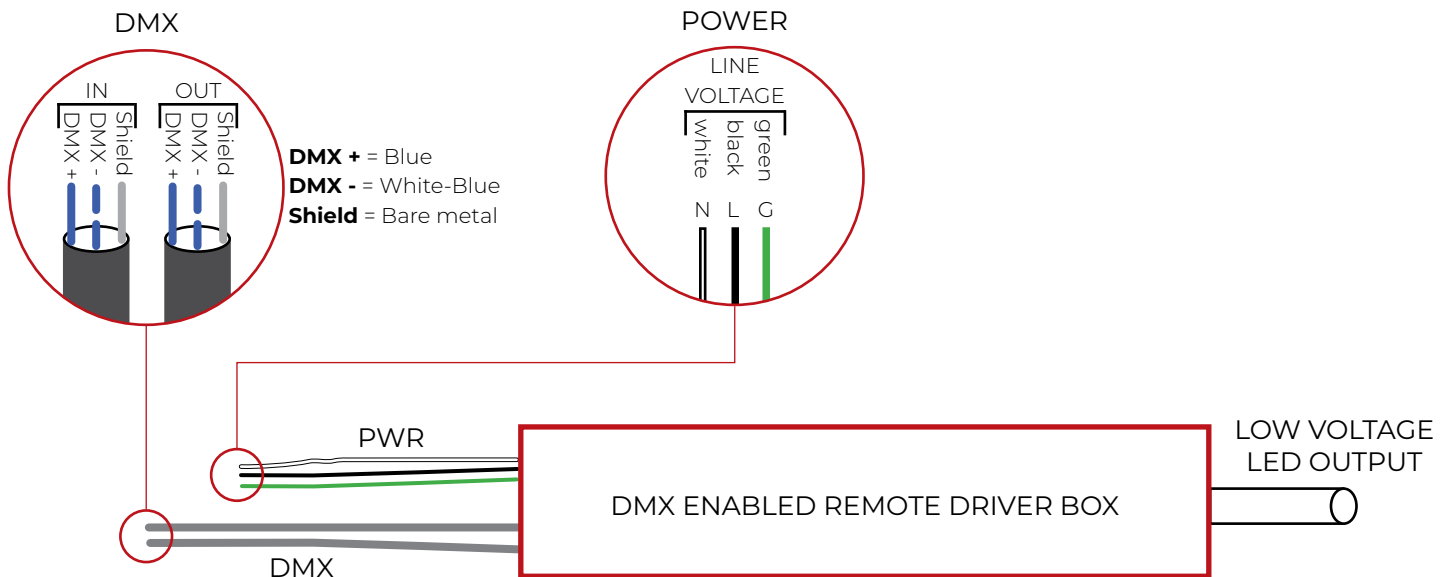
Maximum **32 drivers** per DMX run.
The end of the line must be terminated by a 120 Ω resistor

1 J-BOX DMX DAISY CHAIN DETAIL



Low capacitance DMX cable to next fixture

2 DMX CONNECTION REMOTE DRIVER



3 LAST DMX CONNECTION DETAIL

