Metalumen

Ideas brought to light

FLOATING OPTIC®

ARCHES

A4P & A4PI Pendant Series
A4S Surface Series

The ARCHES are linear LED luminaires engineered for supreme functionality, high efficacy and leading edge design. They are completely designed optically and aesthetically with innovation and accuracy in mind. The carefully constructed interior curved reflector allows the lightbeam to continuously bounce creating a smooth, consistent glow with wide Bat-wing distribution, all the while completely concealing the LED array for excellent glare-free brightness control.

The exterior floating profile follows a well-balanced and proportionate arch that outlines the features for great modularity and in-field customization. The architectural look coupled with a sleek end-cap design complements the form factor and portrays a very narrow body as a narrower profile. The simplicity in look and function is maximized in the complexity of its careful design. These open cavity luminaires look astonishing in any office environment, library, retail space, classroom or health facility. The A4 Series available in pendant direct, pendant direct/indirect and surface mounting with symmetric distribution for ideal performance in any application.

Simple elegance that is architecturally breathtaking.

A4S

A4P

A4PI
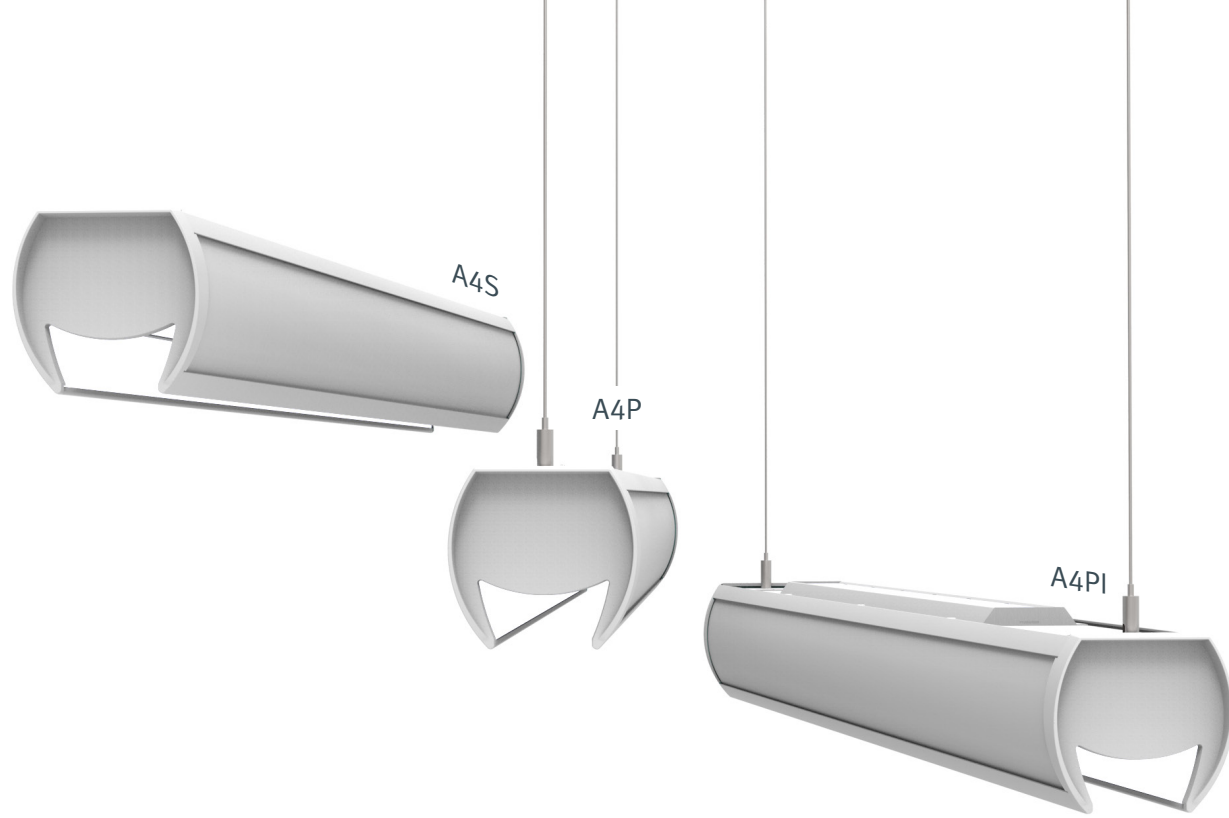
The ARCHES enjoys 100% concealed linear LED arrays mounted on both sides of the upper extrusion interior. With quick disconnect wiring, installation and maintenance has never been easier. The luminaires are offered in 3 fixed CCTs (3000K, 3500K, 4000K) and 2-White Tunable (2700K-6500K). The uplight component is controlled separately by a linear LED array facing upwards to maximize efficacy. Standard 0-10V drivers are included and 2-White Tunable separate controls are compatible with any standard DMX system in the market place.

ARCHES' Floating-Optic® design marries a high (98%) reflectivity surface to carefully angled series of bends. The design is then complemented with a perfectly slanted LED array support to deliver a wide batwing distribution while hiding the source completely. The entire open cavity aperture is 2.3" wide creating a floating experience to a narrow profile that hides in the architecture of the space.

BEYOND "SWITCHING FROM FLUORESCENT TO LED" APPROACH

With building code standard improving, luminaires today struggle to meet the criteria necessary for the modern office environment and energy savings. The A4 high efficacy LED system and optical design coupled with standard 0-10V dimming driver allow easy and flexible integration with latest lighting control system, occupancy sensors, and daylight harvesting controls. Not only is it a logical transition from FL to LED, but from current LED to the LED A4 Series lens-free high efficacious and efficient luminaire.

Metalumen's 2-White Tunable LED Board
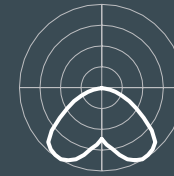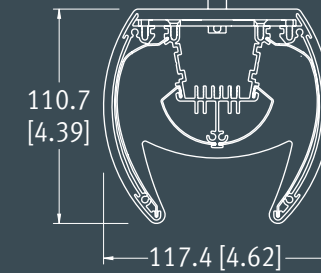
6500K

2700K
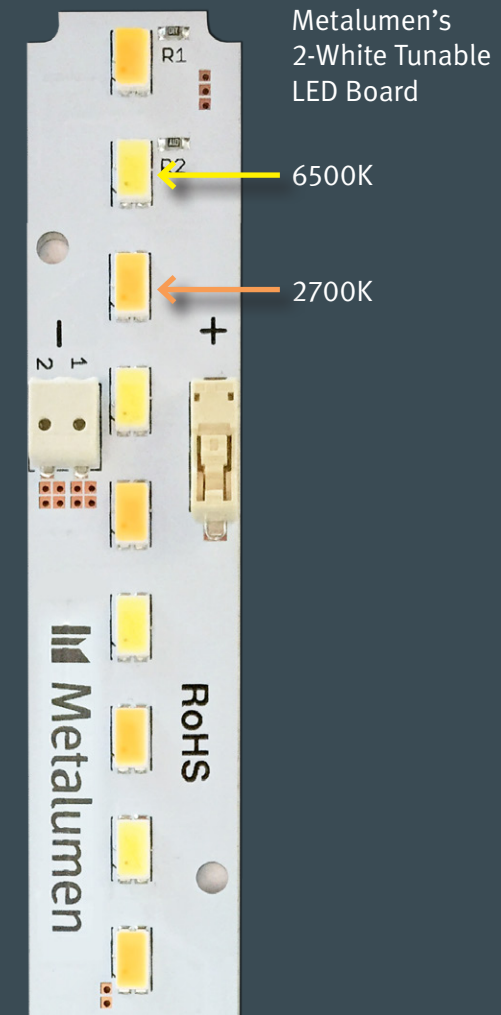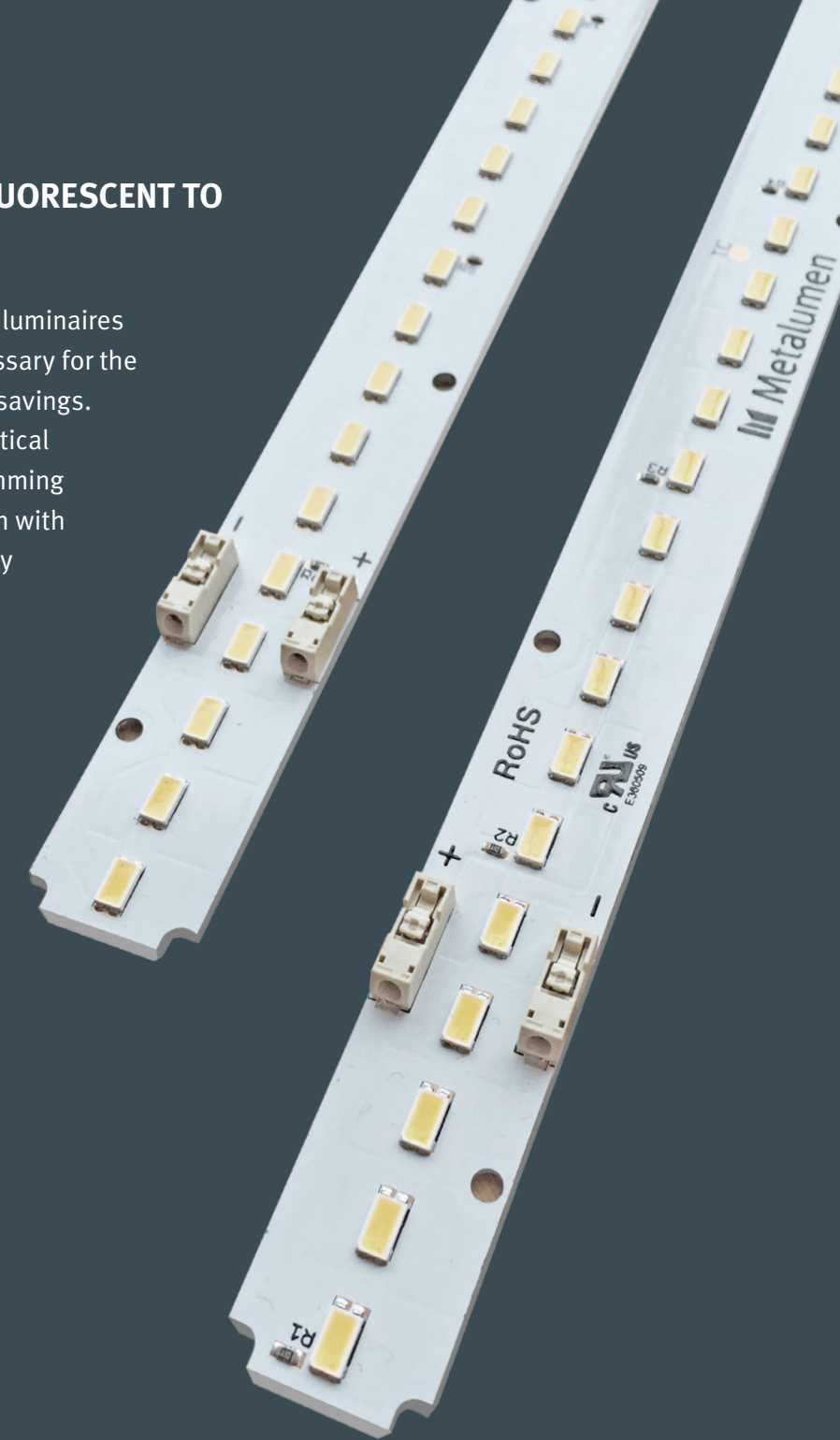
DRIVER

Metalumen offers 0-10V dimming drivers as a standard. Dimming range is down to 10%. Dimming drivers are available down to 1%. Power factor @ full load is >90% with a Class 2 rating.
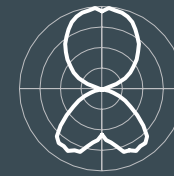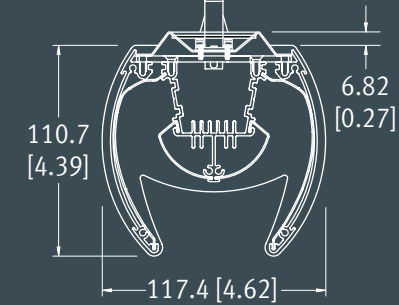
A4P

A4P-2L35K-4-N-N-L3
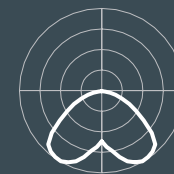Wattage: 49
Lumens: 4457
Efficacy: 92 LPW

110.7
[4.39]

117.4 [4.62]

A4PI

A4PI-2L35K-4-C-N-UHL1
Wattage: 46
Lumens: 4810
Efficacy: 105 LPW

6.82
[0.27]

110.7
[4.39]

117.4 [4.62]

A4S

A4S-2L35K-4-N-N-L3
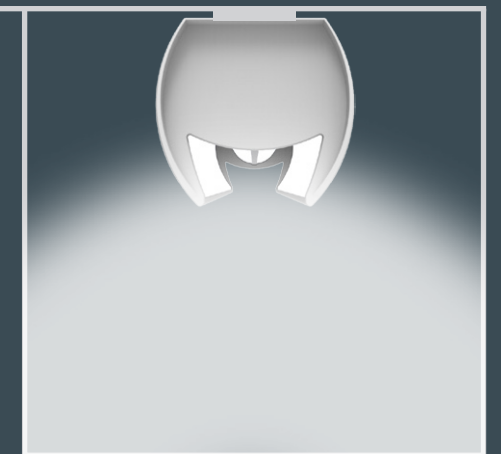Wattage: 49
Lumens: 4457
Efficacy: 92 LPW

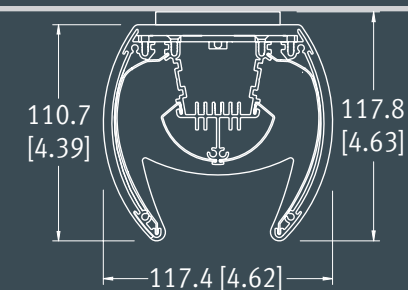110.7
[4.39]

117.8
[4.63]

117.4 [4.62]

FLOATING OPTIC®

We have gone beyond the barrier of using lenses in our innovative fixtures. Our newly designed Floating Optic® luminaires are designed around the LED engine and high efficient optical system. We rely on every angle of the optical system utilized in our design to efficiently and optimally control the light beam. The carefully designed reflector also perfects the shape of the distribution curve to make sure it works best in the application for which it was designed.
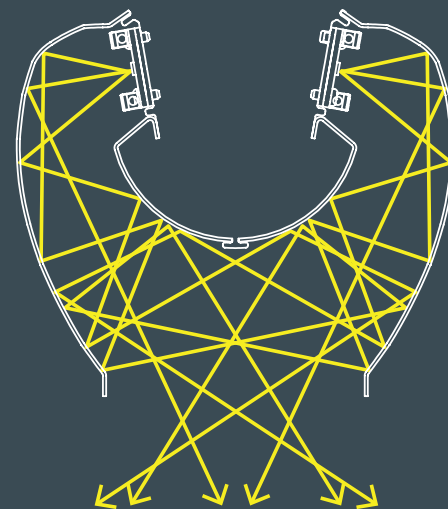
Ray tracing pattern of reflective optics

CONTROL OPTIONS

2-White Tunable Module by Metalumen

2-White Tunable

2700K   3000K   4500K   6500K
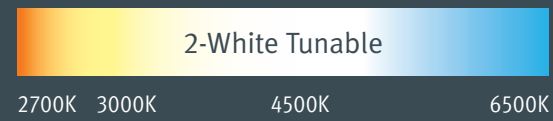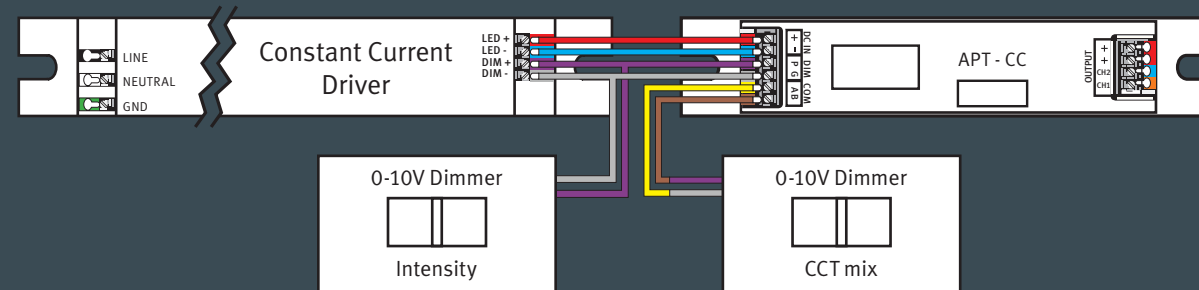
- DMX wired communication via COM ports with up to 512 addresses
- Dimming using a 0-10V dimmer connected to the COM ports

OPTION CODES	Max Output Channels	Max Output Power [W]	Max Channel Power [W]	Control over Driver Dim	0-10V Dim	Dim Minimum %	0-10V-CCT/Intensity
V	2	100	100	•		*	•
X	2	100	100	•	•	1%	

* = Dim minimum limited by driver specs

WIRING DIAGRAM

Dual 0-10V Dimmer Configuration

LINE / NEUTRAL / GND — Constant Current Driver — LED+ LED- DIM+ DIM- — APT - CC — OUTPUT

0-10V Dimmer — Intensity

0-10V Dimmer — CCT mix

DMX Configuration

LINE / NEUTRAL / GND — Constant Current Driver — LED+ LED- DIM+ DIM- — APT - CC — OUTPUT

DMX Controller CCT mix and/or intensity

DMX Cable — DATA+ — DATA-
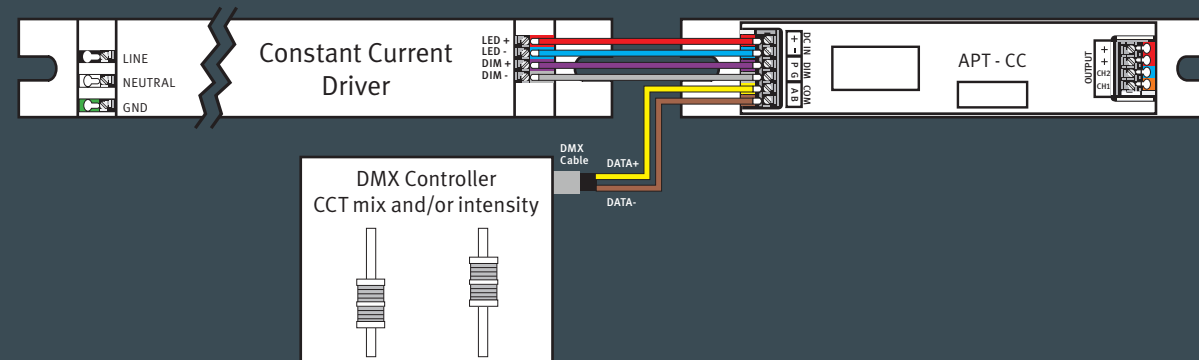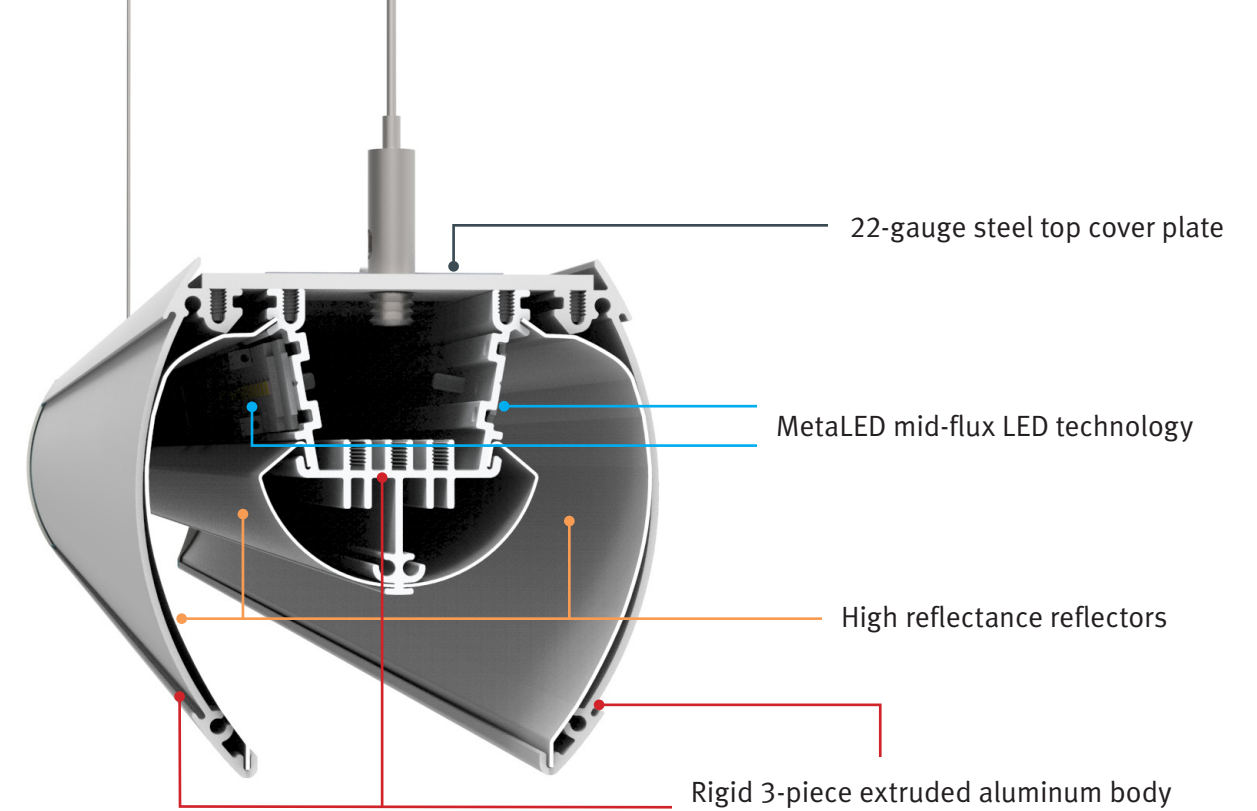
2-White Tunable Control Options (By Others):

- Standard 512 channel DMX system by Lutron, Fulham, etc... (requires complete DMX system)
- Standard 0-10V dimmers: one for Intensity and another for CCT mix.

22-gauge steel top cover plate

MetaLED mid-flux LED technology

High reflectance reflectors

Rigid 3-piece extruded aluminum body
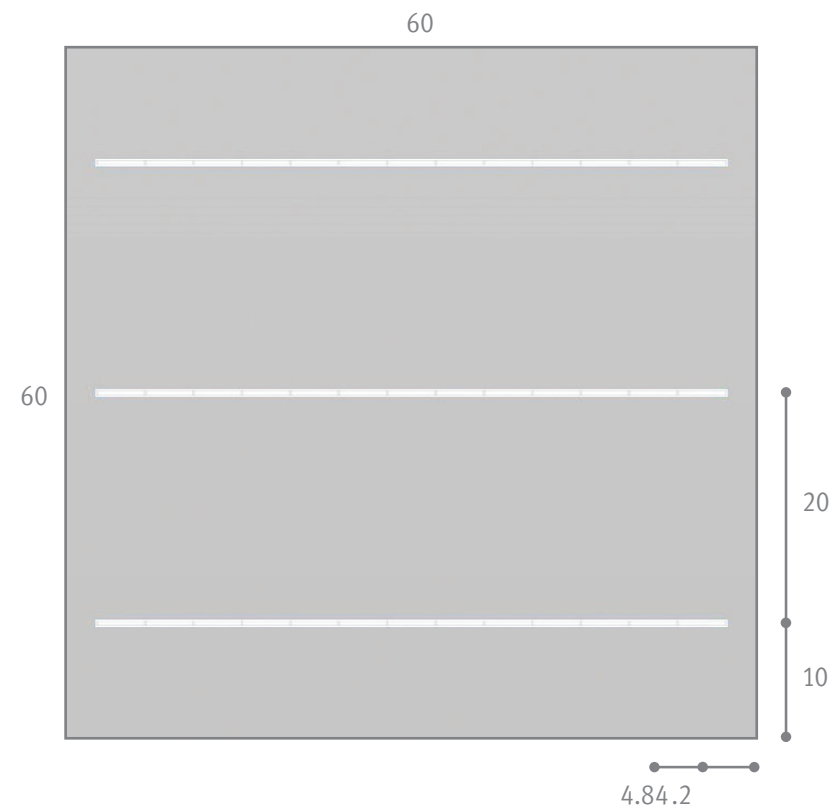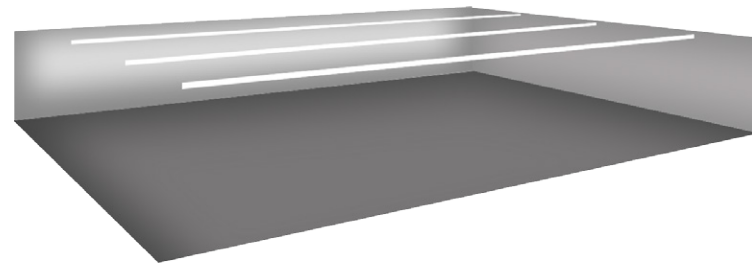
EXTRUSION

Extrusion and LED-Engine coupling design is engineered for maximum heat dissipation. The finned surface at different angles optimally keep the LED array at low operating temperature maintaining consistent lumen output performance, wattage consumption and long life. Our fixture design puts this small form luminaire with a beast of a performer attitude at L90 › 60,000h.
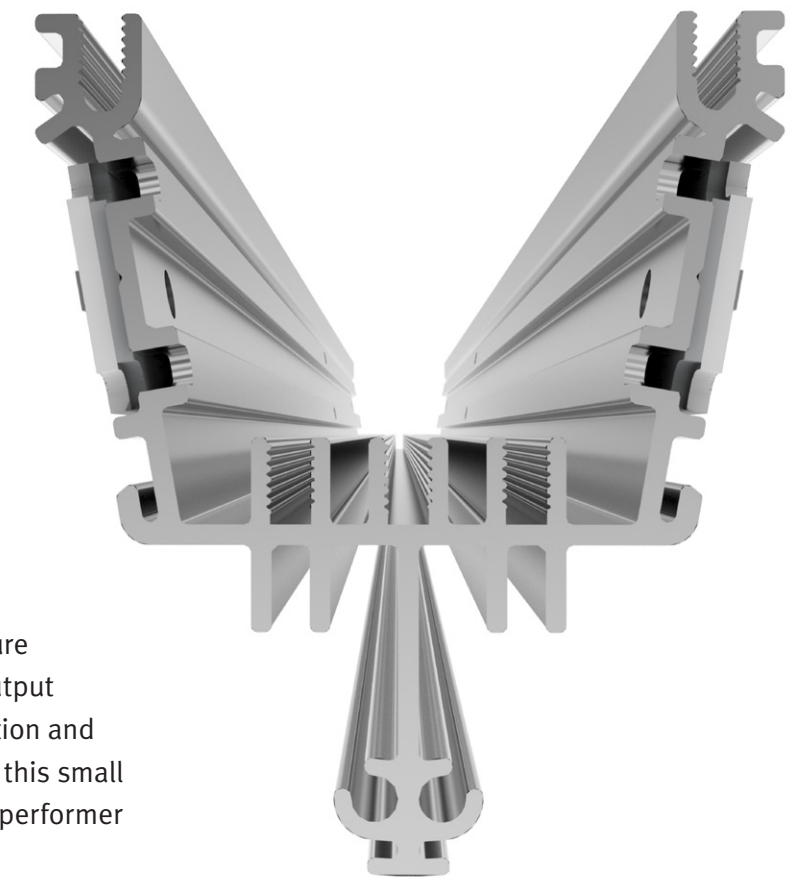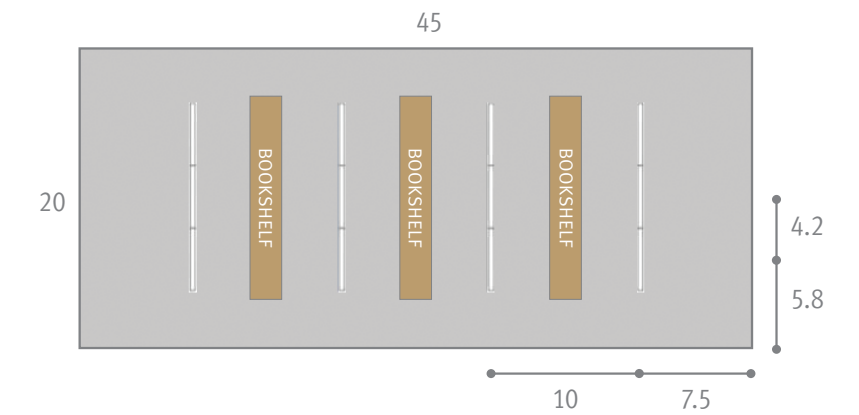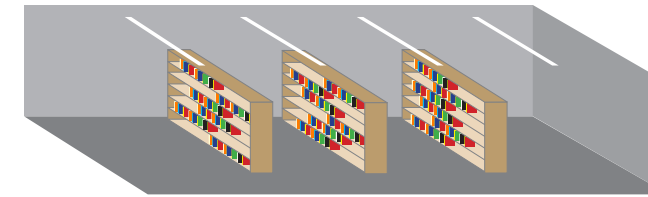
CALCULATION SUMMARIES

Room Type	Open Office	Public Library	Retail Space
Isle Size	–	12 x 6.5'	12 x 6'
Room Size	60 x 60'	20 x 45'	20 x 50'
Ceiling Height	9'	9'	9'
Suspension Height	18"	18"	18"
Catalogue Number	A4PI-3L35K-4-ULL1	A4PI-3L35K-4-ULL1	A4PI-3L35K-4-ULL1
Number of 4' Luminaires	3 runs @ 52'	4 runs @ 12'	6 runs @ 12'
Watts/4' luminaires	38W	38W	38W
Lumens/4' luminaires	3738	3738	3738
Avg. Vertical/Stack Light Level	18 FC	44 FC	40 FC
Avg. Horizontal/Floor Light Level	35 FC	36 FC	49 FC
Spacing	20' OC	9' OC	8.5' OC
Lighting Power Density	0.41 W/ft²	0.51 W/ft²	0.69 W/ft²

Public Library

45
20
4.2
5.8
10
7.5

Open Office

60
60
20
10
4.8 4.2

Retail Space

50
5.482
20
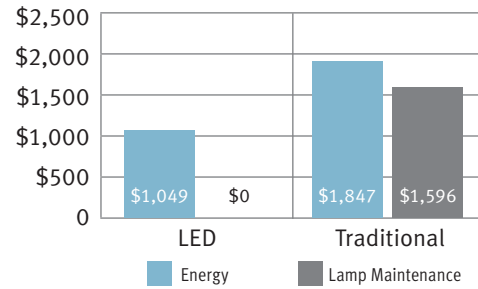5
8

SYSTEM ENERGY & MAINTENANCE SAVINGS

Study Perimeters: Open Office 80 x 60' | Ceiling Height: 9' | 5 continuous runs | Reflectance: 80/50/20

Annual Operating Cost
Energy & Lamp Maintenance

Bar chart values:
- LED: Energy $1,049, Lamp Maintenance $0
- Traditional: Energy $1,847, Lamp Maintenance $1,596

Legend: ■ Energy ■ Lamp Maintenance

System Energy & Maintenance Cost Summary

	LED	Traditional
Total Initial Fixture/Installation Cost	$30,900	$26,845
Total System kW	2.29	4.03
Annual kWh	8,359	14,710
Cost of Energy per kWh	$0.120	$0.120
kWh Inflation Rate (%/yr)	1.00%	1.00%
Average Annual Energy Cost	$1,049	$1,847
Average Annual Maintenance Cost	$0	$1,596
Average Annual Energy & Maintenance Costs	$1,049	$3,443
Average Annual Energy & Maintenance Savings	$2,394	

Payback Analysis
Average Annualized Savings Per Year

Annual Energy Savings	$797
Annual Lamp Maintenance Savings	$1,596
Annual Combined Savings	$2,394
Cost of Waiting (Monthly)	$199
Simple Payback (years)	1.69
IRR (%)	58%
10 Year Cash Flow (Energy & Lamp Maintenance)	$19,882

	Savings		Cost/year	
	Annual	Cumulative	LED	Traditional
1st Year	$762	$762	$1,003	$1,765
5th Year	$2,374	$7,815	$1,023	$3,397
10th Year	$2,394	$19,882	$1,049	$3,443

	Savings	Cost	
		LED	Traditional
10 Year Total	$23,937	$10,494	$34,431

*** Calculation is based on actual LED fixture used in comparison to a 2-T5 28W FL fixture. Assumptions are $0.12 per KWh and 10 operating Hours/day (10h @ full power). These are estimated savings only. Annual and monthly savings are based on a number of variables and assumptions that could change over time. The actual savings derived by our firm may be higher or lower. Metalumen's business does not imply a warranty of performance or savings as calculated and shown within this document.

LED VS. FLUORESCENT ENERGY SAVINGS

4' A4P / A4S

Light Level	Wattage	Lumens Delivered	Efficacy (LPW)	Fluorescent Equivalent	Energy Savings*
		A4	A4		
L1	28	2437	88	1T8/1T5	29%
L2	35	3101	88	2T8/2T5	45%
L3	48	4457	93	1T5HO	23%
L4	97	8523	88	2T5HO	22%

* Energy Savings based upon standard lamp/ballast combination using an equivalent high efficient FL system.

COMPETITION COMPARISONS

Public Library | Room Size: 50 x 50' | Ceiling Height: 9' w/18" suspension | 4 runs @ 12'

	Metalumen A4PI A4PI-2L35K-4-C-N-ULL1	Competitor A
Delivered Lumens	3299	3400
Input Power (Watts)	35	33.5
Delivered LPW	95	101
Watts/Sq.Ft.	0.71	0.68
Horizontal Avg. Fc	44	39
Horizontal Max Fc	62	58
Horizontal Min Fc	1	1.79
Max/Avg	1.41	1.49
Vertical Avg. Fc	34	28

	Metalumen A4PI A4PI-2L35K-4-C-N-ULL1	Competitor B
Delivered Lumens	3299	3322
Input Power (Watts)	35	39
Delivered LPW	95	85
Watts/Sq.Ft.	0.71	0.80
Horizontal Avg. Fc	44	45
Horizontal Max Fc	62	71
Horizontal Min Fc	1	1.39
Max/Avg	1.41	1.58
Vertical Avg. Fc	34	30

ORDERING LOGIC
A4P & A4S

Example Part Number

A4P	-	2L35K	-	4	-	N	N	-	SA	-	L3	1	-	PA	-	4	-	N	R	-	O
Model		Color Temp		Length		Opt. Up	Opt. Down		Finish		LL/Driver	Circuitry		Mounting		Voltage		Control	DL		End Cap

Model	Length	Finish	Light Level (LL) / Driver	Mounting	Control
A4P = Pendant	**2 =** 2 ft	**B =** Black	**Fixture Lumens**	**PA =** Pendant Aircraft Cable *(A4P)*	**N =** None *(Integral Driver 0-10V)*
A4S = Surface	**4 =** 4 ft	**SA =** Satin Aluminum	Light level measured at 3500K. Add 3% lumen output for 4000K or subtract 2% lumen output for 3000K.	**PT =** Pendant Aircraft Cable for T-Bar *(A4P)*	**X =** Module to DMX **
Color Temp	**8 =** 8 ft	**W =** White		**SS =** Solid Stem *(A4P)*	**V =** Module to 2-dimmers **
2L30K = 3000K	**R =** Continuous Rows ***	**C =** Custom Finish *Specify RAL#:*		**PP =** Power Over Aircraft Cable *** *(A4P)*	**Drive Location (DL) - For A4P only**
2L35K = 3500K	**Optics Up**			**S =** Surface *(A4S)*	**N =** None *(Mounted Integral)*
2L40K = 4000K	**N =** None	*Side Decals are optional. See Spec Sheet for more information*		**Voltage**	**R =** Remote Driver Box ***
2LTUN = 2-White Tunable* *(2700 - 6500K)*	**Optics Down**		**Circuitry**	**1 =** 120 V	**RC =** Remote Surface Canopy ***
	N = None		**1 =** 1 Circuit	**2 =** 277 V	**End Cap Options**
				3 = 347 V	**O =** Open (Standard)
				4 = UNV (120-277 V)	**X =** Custom ***

0-10V Dimming (Standard)	3500k
L1	2437
L2	3101
L3	4457
L4	8523

Based on 4ft sections.

A4PI

Example Part Number

A4PI	-	3L35K	-	4	-	C	N	-	SA	-	UML3	1	-	PA	-	4	-	N	R	-	O
Model		Color Temp		Length		Opt. Up	Opt. Down		Finish		LL/Driver	Circuitry		Mounting		Voltage		Control	DL		End Cap

Color Temp	Optics Up	Light Level (LL) / Driver	Voltage	Controls
3L30K = 3000K	**C =** Clear Dust Cover	**Fixture Lumens**	**1 =** 120 V	**N =** None *(Integral Driver 0-10V)*
3L35K = 3500K	**Optics Down**	Light level measured at 3500K. Add 3% lumen output for 4000K or subtract 2% lumen output for 3000K.	**2 =** 277 V	**X =** Module to DMX **
3L40K = 4000K	**N =** None		**3 =** 347 V *	**V =** Module to 2-dimmers **
3LTUN = 2-White Tunable* *(2700 - 6500K)*	**Finish**		**4 =** UNV (120 - 277 V)	**Driver Location**
Length	**B =** Black		**Circuitry**	**N =** None (mounted integral)
2 = 2 ft	**SA =** Satin Aluminum		**1 =** 1 Circuit	**R =** Remote Driver Box ***
4 = 4 ft	**W =** White		**UD =** Up/Down Switching	**RC =** Remote Surface Canopy ***
8 = 8 ft	**C =** Custom Finish *Specify RAL#:*		**Circuitry**	**End Cap Options**
R = Continuous Rows ***			**PA =** Pendant Aircraft Cable	**O =** Open (Standard)
	Side Decals are optional. See Spec Sheet for decal information		**PT =** Pendant Aircraft Cable for T-Bar	**X =** Custom (Consult Factory)
			SS = Solid Stem	

0-10V Dimming (Standard)

Uplight Level	Downlight Level	Code	Lumens
Low Up		ULL1	3738
Medium Up	L1 3500K	UML1	4093
High Up		UHL1	4810
Low Up		ULL2	4406
Medium Up	L2 3500K	UML2	4760
High Up		UHL2	5480
Low Up		ULL3	5761
Medium Up	L3 3500K	UML3	6115
High Up		UHL3	6834
Low Up		ULL4	9845
Medium Up	L4 3500K	UML4	10194
High Up		UHL4	10918

Based on 4ft sections.

* Remote Mounted Driver Only. Consult factory. | **Available with 2-White Tunable option only. Standard DMX system by others required for option "X", or standard 0-10V dimmers - one for intensity and another for CCT mix required for option "V". | *** Consult factory

Due to Metalumen's continuous improvement policy, specifications may change without notice.

Custom Image
Custom Finish
NEUROLOGY
Custom Cut-Out
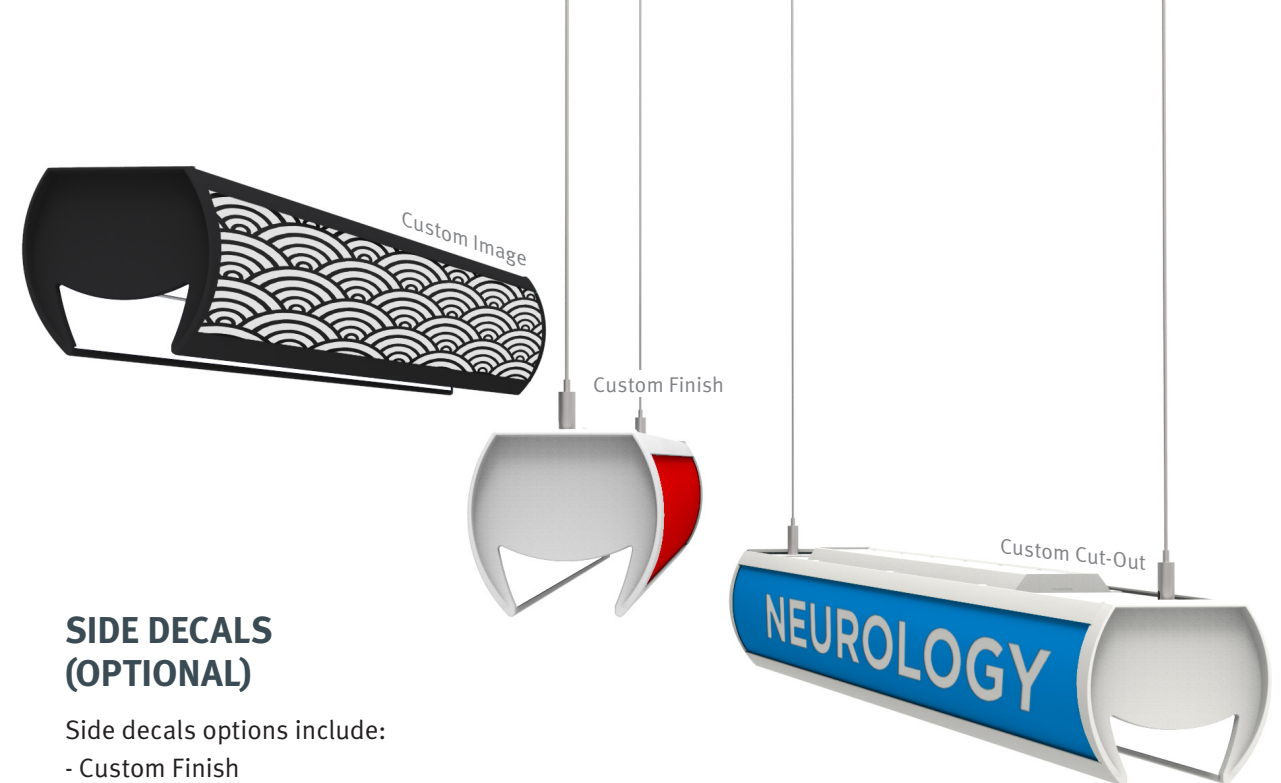
SIDE DECALS (OPTIONAL)

Side decals options include:
- Custom Finish
- Custom Image (customer provides hi res PDF)
- Custom Cut Out (customer provides vector file)

See spec sheet for decal dimensions

STANDARD LENGTHS

8'
4'
2'

Continuous rows also available. Please consult factory.

STANDARD FINISHES

WHITE
SATIN ALUMINUM
BLACK

Custom finishes available. Specify RAL# in spec sheet.

APPROVALS

Conforming to NRTL safety and IES recommendation testing standards. All components are UL/CSA/QPS recognized or listed. RoHS, LM79, LM80 and LM82 compliant.

ENVIRONMENT

Suitable for dry locations.

WARRANTY

Metalumen will warrant defective luminaires for 5 years from date of purchase. Warranty is valid if luminaire is installed and used according to specification. If defective, Metalumen will send replacement boards or drivers at no cost along with detailed replacement instructions and instructions on how to return defective components to Metalumen.

5 YEAR WARRANTY

ARCHES
A4P & A4PI Pendant Series
A4S Surface Series
LED Linear Luminaires

Metalumen Manufacturing Inc.
570 Southgate Drive
Guelph, Ontairo, Canada
N1G 4P6

Toll Free: 1.800.621.6785
Tel: 1.519.822.4381
Fax: 1.519.822.4589

Mailing Address:
PO Box 1779
Guelph, Ontario, Canada
N1H 6Z9

www.metalumen.com

Metalumen

Ideas brought to light