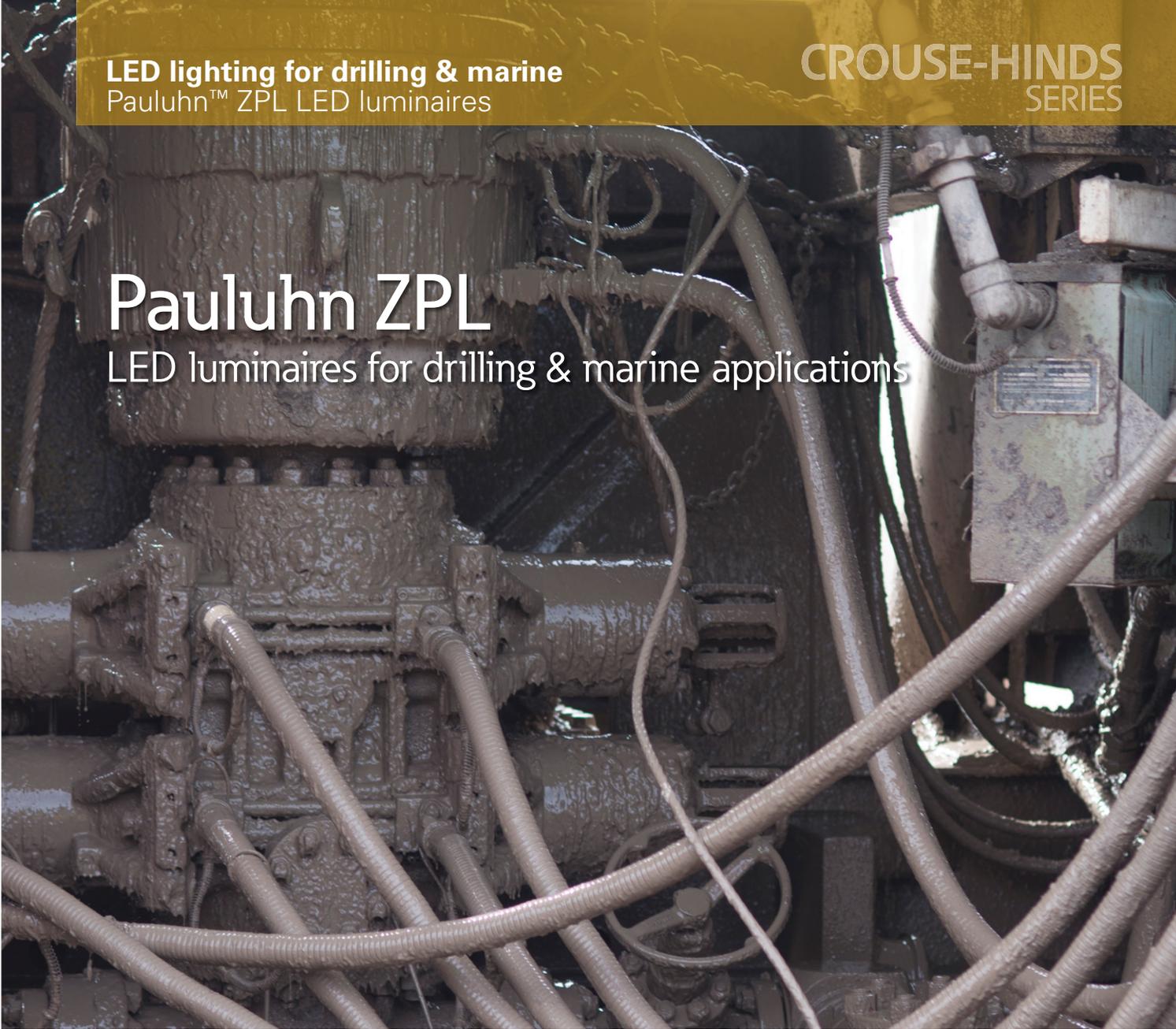


LED lighting for drilling & marine
Pauluhn™ ZPL LED luminaires

CROUSE-HINDS
SERIES

Pauluhn ZPL

LED luminaires for drilling & marine applications



EATON

Powering Business Worldwide



Pauluhn ZPL explosionproof LEDs

Safe. Reliable. Efficient.

Featuring the industry's broadest range of LED luminaires for harsh and hazardous environments, Eaton's Crouse-Hinds can deliver a lighting solution that performs reliably in even the worst operating conditions. All the while reducing your energy, maintenance and manpower costs.

Why LED?

Useful life

Rated life is up to 60,000 hours of maintenance-free and safe operation

Energy efficiency

LED average energy consumption is 61% less than T12, T8 and T5HO fluorescent fixtures

Start/restart time

Instant illumination vs. 10 minute restrike time for fluorescent

Light quality

Higher color rendering and color temperature compared to fluorescent

Environmental benefits

Mercury-free LED eliminates disposal costs and lower energy consumption for a smaller carbon footprint

Why Crouse-Hinds?

Industry-best reliability

Built to withstand extreme temperatures, vibration, water and dust

Thermal management

Effective heat sinking ensures longer life

Quality of light

Custom optics designed to maximize light distribution and intensity

Why Pauluhn ZPL LED?

Designed for drilling. Pauluhn ZPL linear LED luminaires are engineered to stand up to the demanding conditions faced on land-based drilling rigs. The ZPL stands up to high vibration, hose down, shock and impact, while delivering long life and high lumen performance for up to 10 years.



Custom optics:

- 120° beam spread maximizes illumination on wall panels

Comprehensive certification:

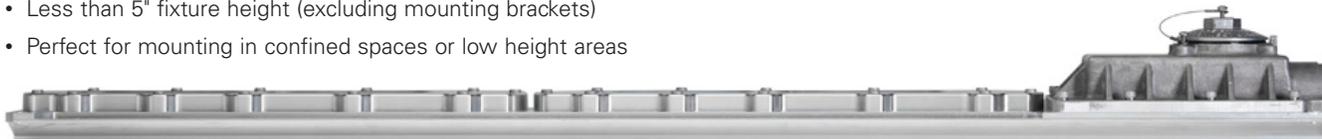
- Single model certified for use in Class I, Division 1 and Class II, Division 1 harsh and hazardous applications

Quick & easy installation:

- Easy access to drivers and wiring
- No custom brackets or hardware needed
- Two mounting options available

Slim profile:

- Less than 5" fixture height (excluding mounting brackets)
- Perfect for mounting in confined spaces or low height areas



Built to last:

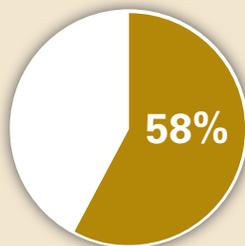
- Ingress protection from hose down water or diesel fuel in harsh operational conditions – passed 2,000 psi high pressure test
- Vibration, impact and shock-resistant – passed 5G, 3-axis vibration test
- 60,000 hour lifetime at 55°C ambient
- 100,000+ hour lifetime at 40°C and below

LED vs. fluorescent savings at a glance

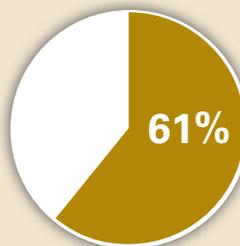
Why are so many rigs making the switch from fluorescent to LED?

The numbers say it all.

ZPL4/UNV1 vs. T12HO fluorescent



58% REDUCTION IN ENERGY COSTS



61% LOWER TOTAL COST OF OWNERSHIP



100% MAINTENANCE REDUCTION

Assumptions: Calculations based on overall life of the LED system. Energy cost of \$.09 per kilowatt; 24 hour per day operation; labor rate of \$75 each for 2 workers; average time for fixture maintenance of 1 hour.

Pauluhn ZPL LED luminaires

Pauluhn ZPL explosionproof linear LEDs are specifically designed to replace fluorescent T12, T8 and T5HO lighting on marine vessels and land-based and offshore drilling platforms. The rugged and durable design features the industry's most versatile and flexible mounting options. The Pauluhn ZPL is the ideal solution for high vibration, impact and hose down in drilling applications.

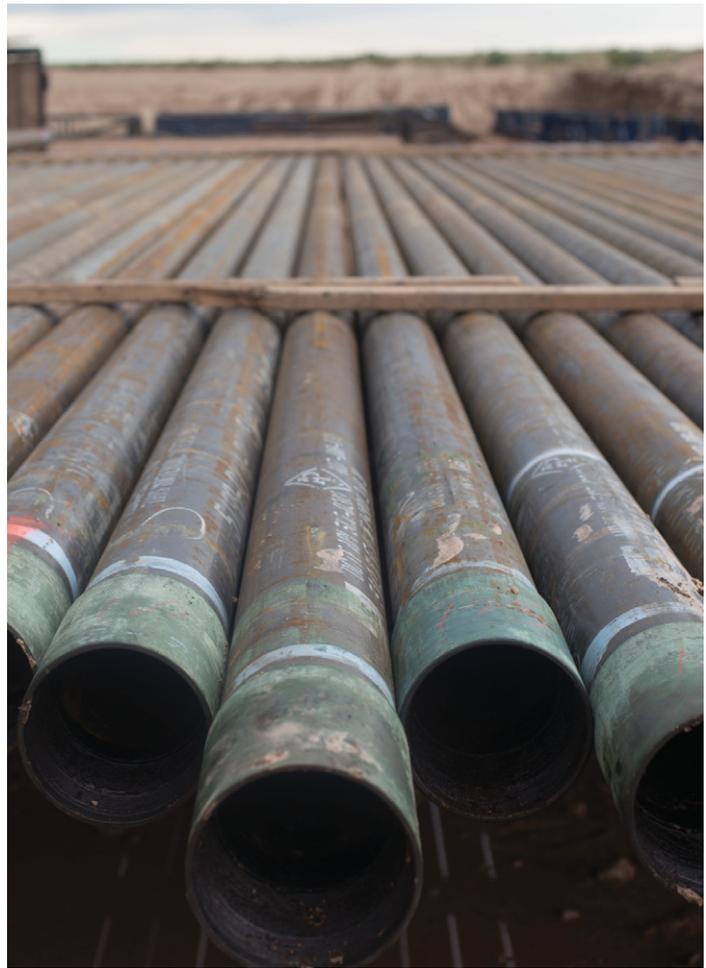
Applications:

Marine vessels, land-based and offshore rigs; areas include: mud room, derrick, mast, SCR house, top drive, operator's house, power and pump stations.

Key features & benefits:

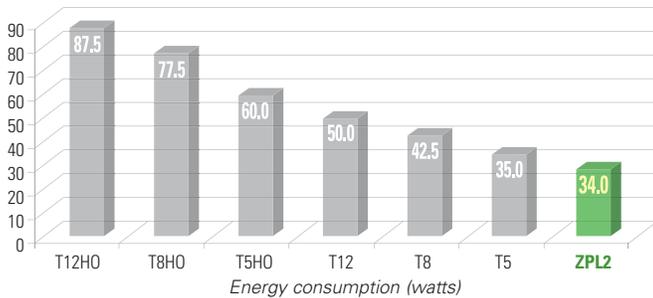
- Industry-leading efficacy: up to 120 LPW
- 5000K CCT, 72 CRI
- -25°C to +55°C ambient operating temperature (standard fixture only)
- Low profile fixture (<5" height)
- Flush and swivel mount options
- Wide optics for uniform illumination
- Four points of secondary retention and loop feed wiring
- 2,000 psi high pressure hose rated
- 5G 3-axis vibration
- 2kV surge protection
- 5 year fixture warranty†

† Refer to page 2 of the D-0915 authorized distributor price book for Crouse-Hinds standard Terms and Conditions. 3 year fixture warranty for emergency model.

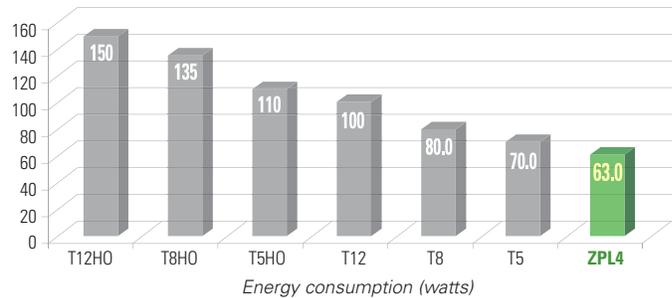


Energy consumption comparison

2 foot ZPL linear LED vs. fluorescent



4 foot ZPL linear LED vs. fluorescent



Model	Typical lumens	Wattage	Lumens per watt	Equivalent HID luminaire	Typical energy savings / lifetime
ZPL2	3,800 +/- 10%	34	111	T12HO	Up to 62%
				T8HO	Up to 57%
				T5HO	Up to 45%
				T12	Up to 34%
				T8	Up to 22%
				T5	Up to 6%

All luminaires in the comparison are 2 ft., 2 lamp

Model	Typical lumens	Wattage	Lumens per watt	Equivalent HID luminaire	Typical energy savings / lifetime
ZPL4	7,600 +/- 10%	63	120	T12HO	Up to 58%
				T8HO	Up to 43%
				T5HO	Up to 53%
				T12	Up to 37%
				T8	Up to 21%
				T5	Up to 10%

All luminaires in the comparison are 4 ft., 2 lamp



Pauluhn ZPL tested to withstand 2,000 psi hose test at 5 ft. distance

Certifications:

NEC/CEC standards:

- Class I, Division 1, Groups C, D
- Class II, Division 1, Groups E, F, G
- Class III
- NEMA 4X; IP66
- Marine and wet locations
- Paint spray rated

UL standards:

- UL844 Electrical Fixture Hangers for Hazardous Locations
- UL1598 Luminaire
- UL1598A Luminaire for Installation on Marine Vessels
- UL924 Emergency Lighting and Power Equipment

CSA standard:

- C22.2 No. 137

Materials:

Housing:

- Copper-free aluminum
- Corro-free™ epoxy powder coat (optional)

Lens:

- Glass
- Diffused glass (optional)

Mounting (ordered separately):

Versatile mounting options:

- Flush mount
- Swivel/surface mount
- Pole mount

Electrical ratings:

	ZPL2	ZPL4	EM
Lumen output	3,800	7,600	7,000
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Voltage	100-277 VAC/108-250 VDC; 347-480 VAC		100-277 VAC

Model	Voltage	Current (A)	Wattage (W)	Power Factor	THD
ZPL2/UNV1	100	.33	33	.99	<20%
ZPL2/UNV1	277	.13	34	.94	<20%
ZPL2/UNV34	347	.09	32	.98	<20%
ZPL2/UNV34	480	.07	33	.94	<20%
ZPL4/UNV1	100	.63	63	.99	<20%
ZPL4/UNV1	277	.23	63	.98	<20%
ZPL4/UNV34	347	.18	62	.99	<20%
ZPL4/UNV34	480	.13	62	.98	<20%
Emergency	100	.81	78	.90	<20%
	277	.31	80	.90	<20%



Temperature codes:

Ambient temp.	Supply wire	Class I, Div. 1	Class II, Div. 1	Simultaneous presence	Paint spray
40°C*	75°C	T6	T5	T6	T5
55°C	75°C	T6	T5	T5	T5
65°C	90°C	T5	T4A	T4A	T5

* EM rated to +40°C only.

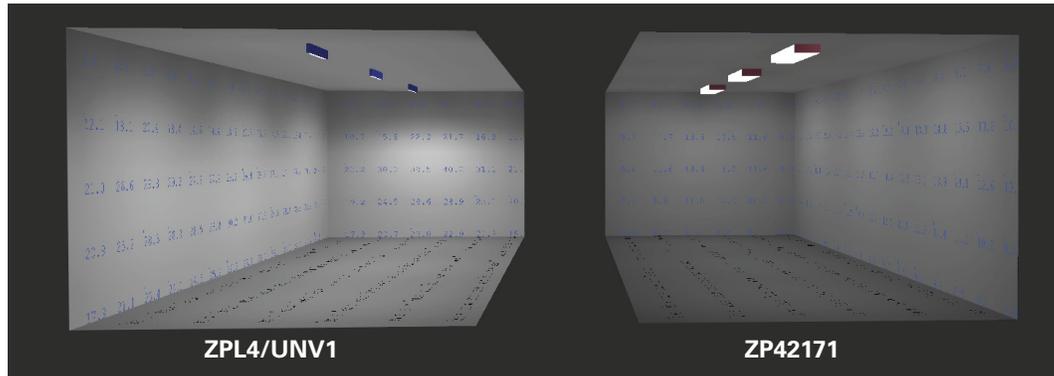
Weights:

Luminaire	lbs.	kg.
ZPL2	18.0	8.2
ZPL4	27.0	12.2
Emergency	37.8	17.1

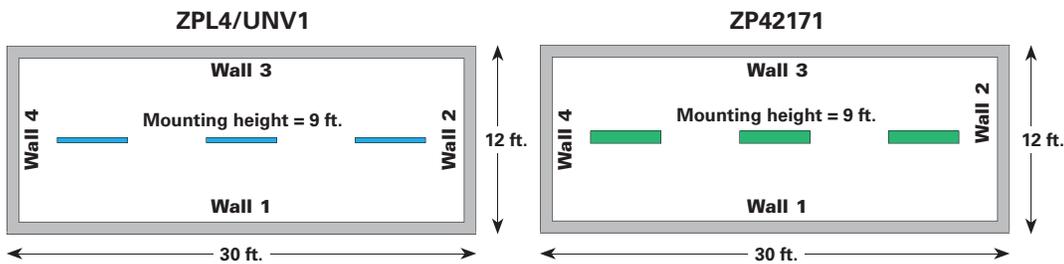
Photometrics

4 ft. ZPL LED with 120° optics vs. 4 ft. 2 lamp T8 ZonePro

21% lower energy consumption and double the average illumination on floor and walls

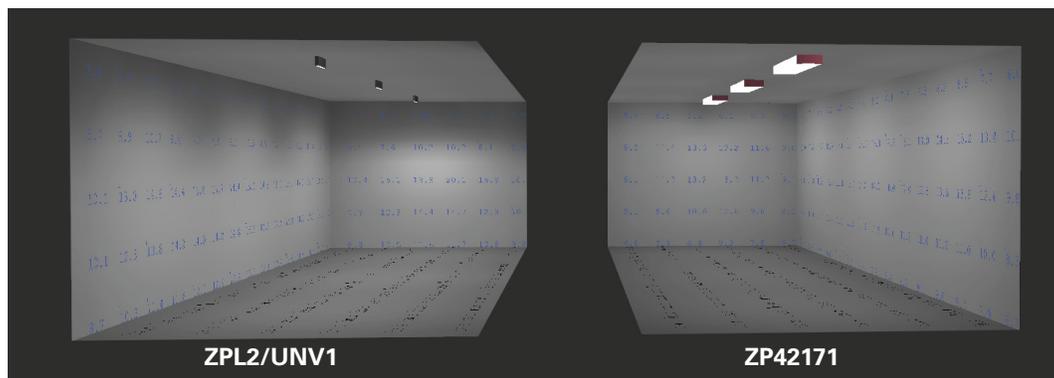


Model	Average footcandles	
	ZPL4/UNV1	ZP42171
Wall 1	21.69	10.98
Wall 2	19.57	9.38
Wall 3	20.35	10.97
Wall 4	19.78	9.38
Floor	40.22	14.91

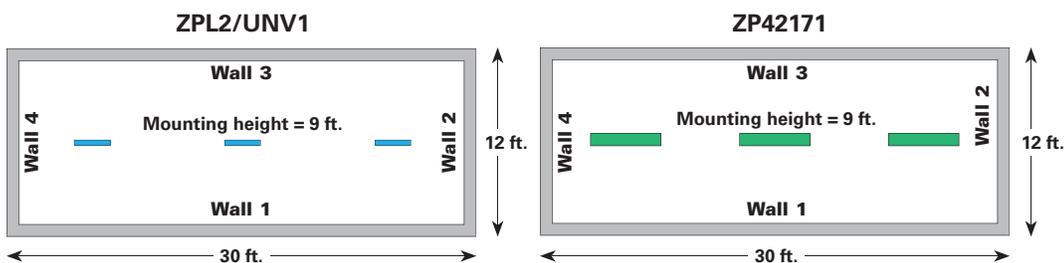


2 ft. ZPL LED with 120° optics vs. 4 ft. 2 lamp T8 ZonePro

58% lower energy consumption and 37% better average illumination on floor

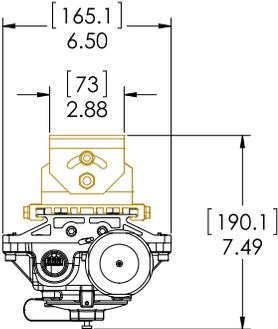
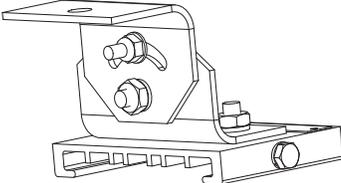


Model	Average footcandles	
	ZPL2/UNV1	ZP42171
Wall 1	10.70	10.72
Wall 2	9.83	9.09
Wall 3	10.07	10.72
Wall 4	9.51	9.09
Floor	19.88	14.52

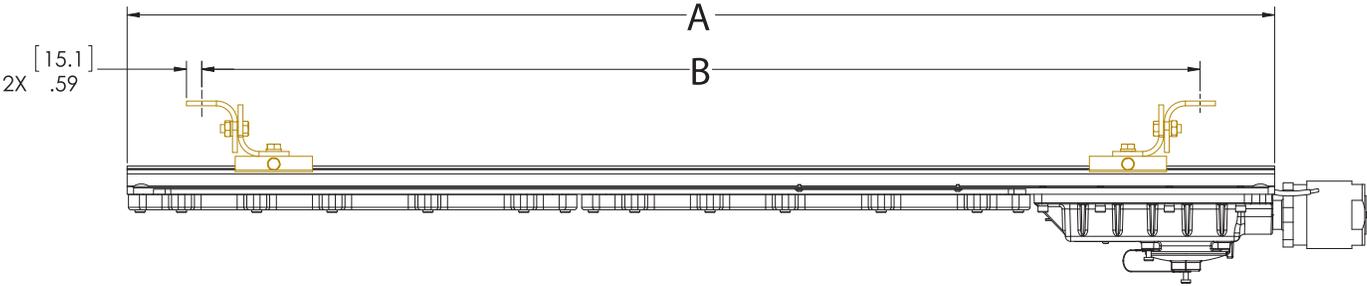
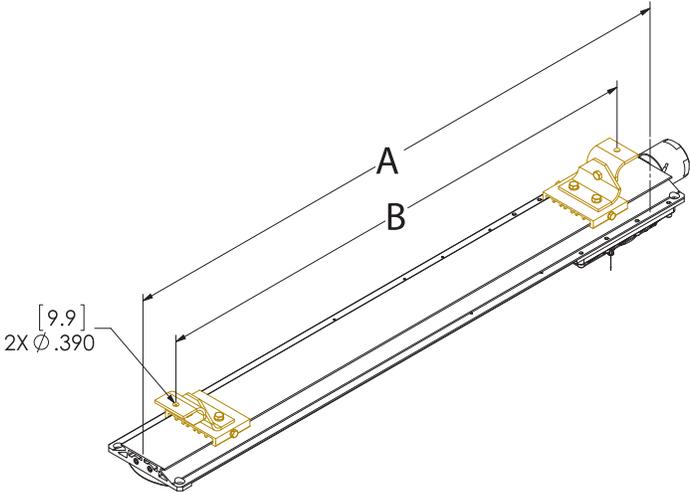


Mounting options

Ceiling/swivel mount
ZP1050MTK

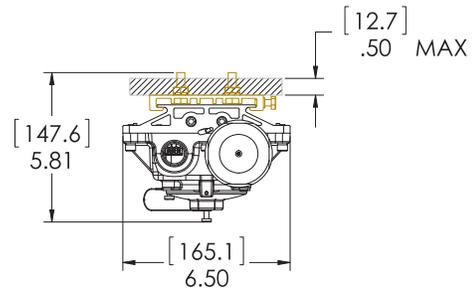
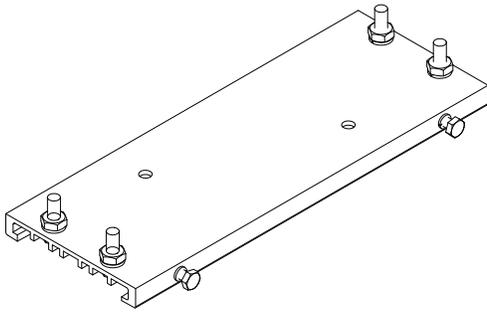


Length	ZPL2		ZPL4	
	in.	mm.	in.	mm.
A	27.0	685	44.6	1133
B	12.0-29.0	222-750	18.0-47.0	222-1194

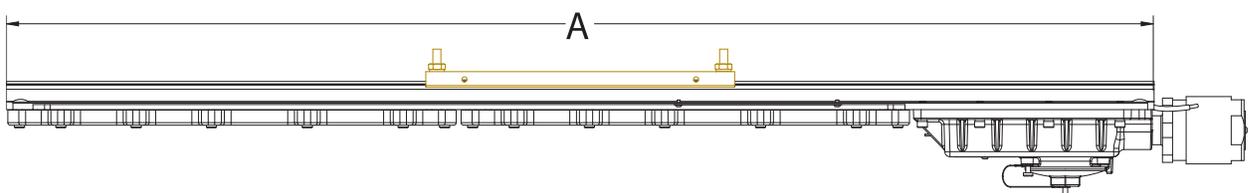
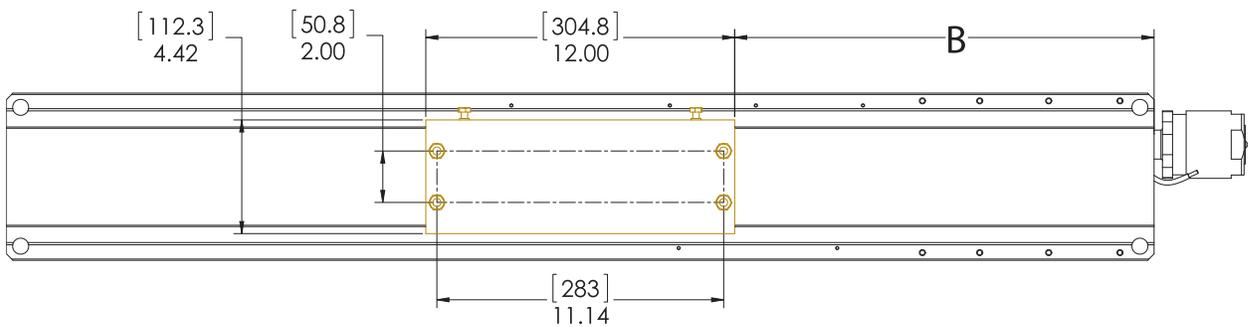
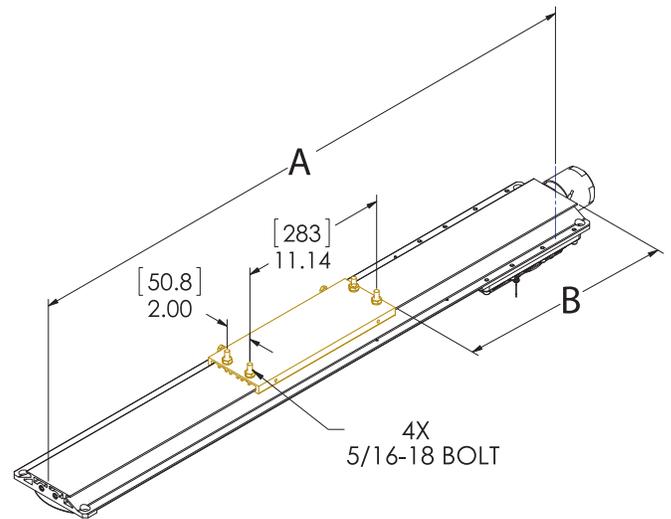


Mounting options

Flush ceiling ZP1057MTK



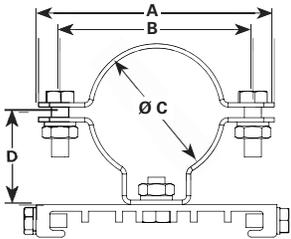
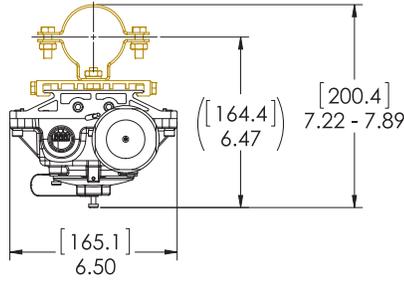
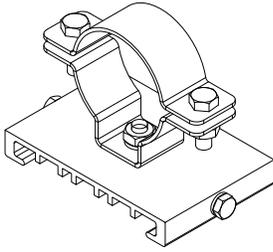
Length	ZPL2		ZPL4	
	in.	mm.	in.	mm.
A	27.0	685	44.6	1133
B	7.5	190	16.3	414



Mounting options

Pole mount

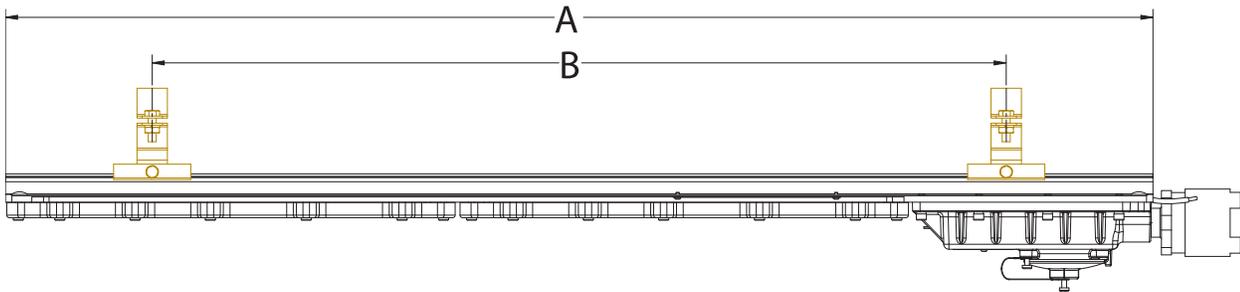
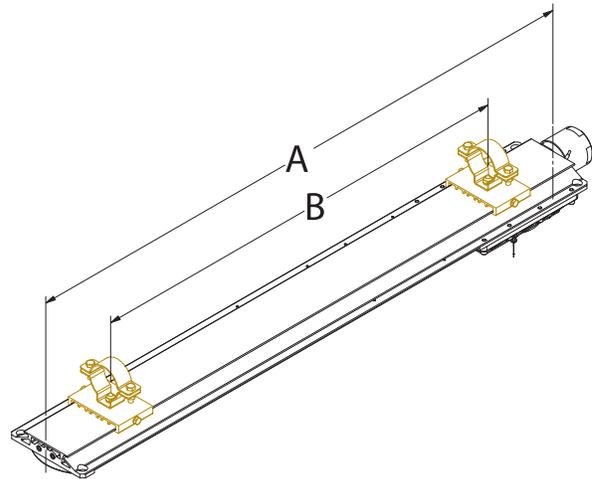
PM KIT 1.25/1.5/2.0



ALL MEASUREMENTS IN INCHES

Configuration	A	B	C	D
PM KIT 1.25	4.331	3.543	1.680	1.693
PM KIT 1.5	3.740	2.953	2.000	1.535
PM KIT 2.0	3.386	2.598	2.360	1.378

Length	ZPL2		ZPL4	
	in.	mm.	in.	mm.
A	27.0	685	44.6	1133
B	12.0-24.0	305-610	18.0-41.6	610-1056



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