

construct the cable is to cut the two spare cables in half and stripping the wire lead ends about 3/8" (9mm) on three of the halves. Plug the connectors of these three cable halves into the driver and each light engine assembly. Finally, connect the stripped leads as indicated in Figure 4.

Connecting Two Lamina Atlas™ White Light Engine Assemblies

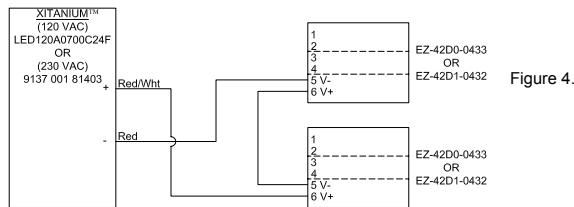


Figure 4.

Electrical Connections

When using constant current LED drivers with high compliance voltage (Advance, LED Works, etc. or a custom driver) the output of the supply must be connected to the part before power is applied to the input of the supply. For more information refer to Lamina's connection application note which can be found on the website at www.laminaighting.com.

Assembly Recommendations

Lamina's Atlas™ Series Light Engines are designed for attachment to a heat sink with conductive epoxy, or screw down for flange mount devices with thermal grease in the joint. For attachment using screws a 4-40 UNC round head or metric equivalent M3 x 0.5 cheese head screw, 18-8 SS is recommended. When mounting the light engine, position the four screws in the center of each of the four slots. Tighten the four screws eventually, first to about 0.89 inch pounds (56 Newton-centimeters), and then tighten each to a maximum torque of 5 inch pounds (45 Newton-centimeter). Flatness requirement of the surface that the light engine is mounted to is 0.001 inch/inch (1mm/meter). To prevent damage when using conductive epoxy do not use mounting screws.

Notes

1. This product uses silicone materials for superior optical performance. Do not expose the part to fluids that may react with silicone compounds. See Dow Chemical Form 45-0113D-01, Silicone Fluid Resistance Guide.
2. Ray trace models are available upon request.
3. Lamina may make process or materials changes affecting the performance or other characteristics of our products. These products supplied after such changes will continue to meet published specifications, but may not be identical to product supplied as samples or under prior orders.

Warranty Statement

Lamina (Seller) extends warranty on goods produced by the Seller for one (1) year from original date of shipment, that the goods sold hereunder are new and free from substantive defects in workmanship and materials. This warranty extends only to the Buyer and not to indirect purchasers or users. Seller's liability under the foregoing warranty is limited to replacement of goods or repair of defects or refund of the purchase price at the seller's sole option. The above warranty does not apply to defects resulting from the improper or inadequate maintenance, unauthorized modification, improper use or operation outside of Seller's specifications for the product, abuse, neglect or accident.

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Patents

Lamina's light engines may be covered by pending patents and/or one or more of the following U.S. and/or International patents: 5878536, 6709749 B, 595380, 6017642, 5565262, 5681444, 5653834, 5581876, 5847935, 5514451, 5747931, 5925203, 5725808, 5929510, 5858145, 5866240, 5953203, 6055151, 614076, 6011330, 6399230, 6914501, 6168490, 6191934, 614075, 6160469, 6300267, 6471805, 6518502, 6739047, 6720859, 6759940, 6518502, 6670856 B1, 6720859, 6713862 B2, WO 00/47399, WO 00/26152, WO 98/19339, 5082804, ZL99808762.9, 69623930, 69628549, 69629572, 805785, 69628549, 843621, 932500, 805785, 812258, 843621, 932500, 805785, 812258, 843621, 932500, 805785, 812258, 843621, 932500, 3327556, 3267299, 3262821, 3405545, 320630, 295695, 284068, 546471, 805785, 812258, 843621, 6455930, 6759940, 6713862, 7,095,053, 7,098,483.

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Atlas™ White Developer Kit

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Atlas™, NT-4000 White Developer Kits

Lamina's **NEW Atlas™**, White Developer Kit series enable users to quickly discover the world of solid state lighting and realize the power of Lamina's super-bright LED light engines. This kit is intended for the rapid evaluation and prototyping of LED lighting solutions based on the Lamina Warm White or Daylight White light engines. The kit is fully assembled and includes everything needed to jump start your design efforts. This comprehensive kit includes Warm White and Daylight White light engine Assemblies, wide and medium optics, a matched, commercially available, constant current driver prewired with AC and DC connections, AC plug adaptors and extra DC connectors.

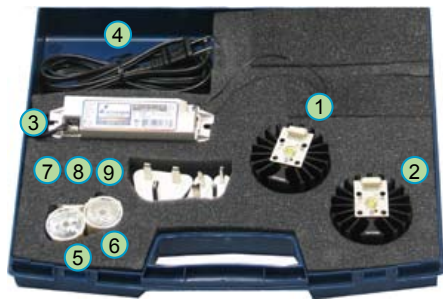


Figure 1.

Overall Case Size - 12" x 9" x 3"

Atlas™, NT-4000 White Developer Kit - DK-04D0-0394 and DK-04D0-0395				
Item	Description	Qty.	P/N	Notes
1	Light Engine Assembly - Warm White Light Source Soldered to EZ Connect with Heat Sink	1	160-0245	N/A
2	Light Engine Assembly - Daylight White Light Source Soldered to EZ Connect with Heat Sink	1	160-0244	LEDynamics 0416-Box-32-D-E-350
3	Driver Sub Assembly, Advance 700mA	1	160-0213* 160-0214*	PHILIPS ADVANCE LED 120 A0700C24F PHILIPS (ADVANCE) 9137 001 81403
4	DC/DC Cable Assembly, 2-pin, 200mm (1 prewired, 2 spare)	3	210-0145	TYCO/AMP 1365323-1
5	Medium Optic, Secondary, NT-4000, 30° Beam Angle	1	OP-4FM1-0442	N/A
6	Wide Optic, Secondary, NT-4000, 45° Beam Angle	1	OP-4FW1-0441	N/A
7	Plug Adapter, AC, UK, Polarized, Ungrounded	1	210-0135	Franzus NW-135C
8	Plug Adapter, AC, China/ANZAC, 230 VAC	1	210-0134	Franzus NW-2C
9	Plug Adapter, AC, Europe, Polarized, Ungrounded	1	210-0133	Franzus NW-1C
*DK-04D0-0394 is configured with 160-0213 - 120 VAC Driver; DK-04D0-0395 is configured with 160-0214 - 230 VAC Driver				

Operating Instructions

1. Remove the Warm White light engine assembly and driver from the kit case and place them on a suitable work surface near an AC power outlet. Please verify the DC/DC connection cable is correctly attached between the light engine and driver. Also, verify the AC power cord is properly connected to the driver.
2. **CAUTION: Lamina LED Light Engines are extremely BRIGHT!** Apply power directly to the light engine with it pointing away from your eyes, or wear suitable protective eyewear. Plug the driver's AC power cord into a 120VAC/60Hz power outlet (230 VAC/50HZ) depending on model selection.
3. To test the included optics, insert the legs of the optic holder into the four corner holes in Lamina's EZ Connect board. The EZ Connect board is designed to align the optic to the center of the light engine and allow the optic to rest on the light engine surface.
4. To apply power to the Daylight White light engine assembly, unplug the AC power and detach the DC/DC connection cable from the Warm White Assembly. Plug the DC connection cable into the Daylight White Assembly then replug the AC cord.

NOTE: Please unplug the AC power before connecting or disconnecting the LED Light Engine to avoid potential damage to the Light Engine or the driver.



Figure 2.



Figure 3.

DC Connection between Light Engine and Driver

The DC connection between the light engine and the driver is shown in Figure 2. Although the DC/DC connection cable is keyed to facilitate correct attachment to the light engine assembly, two connection orientations are possible. The proper connection is to terminals 5 and 6 of the EZ Connect Board; this is the side opposite from the dot indicating terminal 1. If the cable is improperly connected to terminals 1 and 2 of the EZ Connect Board, the light engine cannot be powered, but this should not result in damage to the light engine. Two spare DC/DC connection cables are included for prototyping.

Attaching to your Fixture or Assembly

The light engine assembly can be mounted in several configurations. Ideally, the light engine should be configured horizontally, thereby allowing the heat to radiate through the vertically oriented fins. Alternate assembly positions are also possible. The orientation of the fins will determine how efficiently the heat sink can dissipate the thermal energy.

Handling Precaution

Contact with the silicone based encapsulated on the surface of the light engine must be avoided to prevent damage. Do not apply pressure to the silicone based encapsulant or allow it to come into contact with sharp objects. Lamina LED light engines must be handled from the sides.

Further Prototyping Information and Support

Additional information regarding the Atlas™ series of light engines, optics, heat sinks, accessories, developer kits, compatible drivers, and applications notes can be found by visiting Lamina's website.

Configuration options with Atlas™ White Light Engines

Both Atlas™ White light engines can be connected in series and driven simultaneously using the included 700mA 17W constant current driver. This is useful for a side by side comparison of the light properties of the Atlas™ Warm White and Daylight White light engines. Two spare DC connection cables are provided to construct a cable for this purpose. A simple way to

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