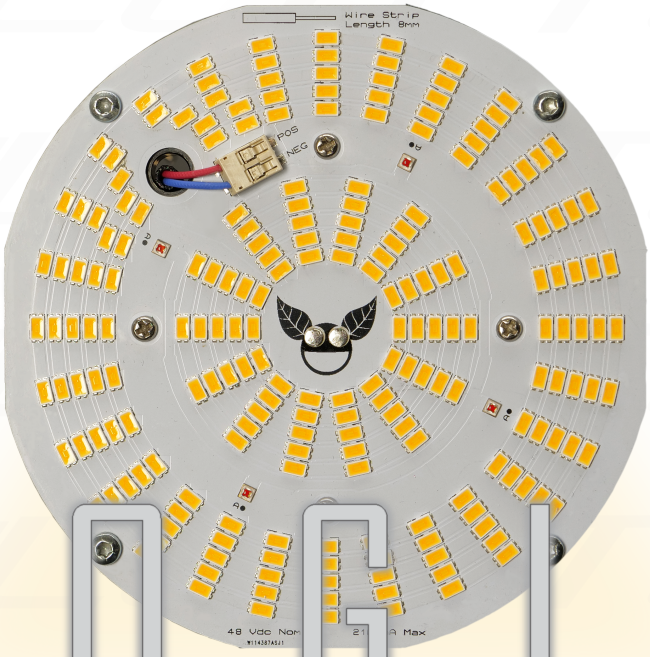
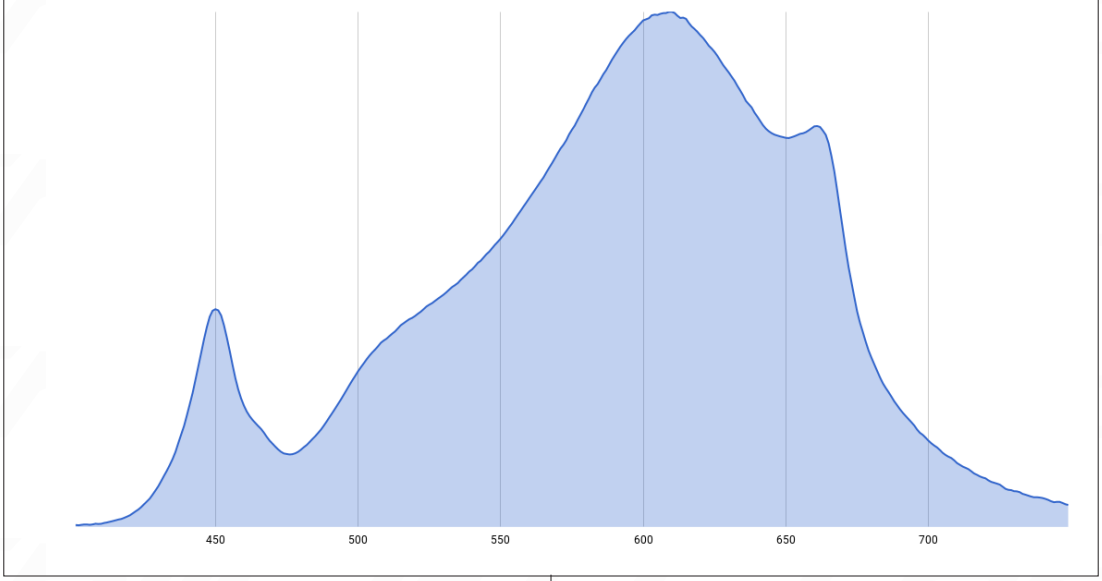
ChiLED Tech



L O G I C

(216) Samsung lm561c 3000k
S6 flux bin
(4) 660nm deep red



dc voltage (V_f)		dc current (max)
48v	x	**2300ma**

100 watt (nom.)

How Many Do I Need?

The ChilLED LOGIC puck was designed specifically as a COB replacement for flowering plants. The warm white 3000k + 660nm deep red fills a niche while offering a red shift that is simply not available in OEM chip on board leds.
LOGIC can be used as a stand alone lighting source for flowering plants. When building a "full cycle" or veg light, we suggest adding some 4000K spectrum to your build.

As a very general guideline, we suggest 38 watts of LOGIC per square foot of canopy for indoor grows NOT utilizing CO2 enrichment. (atmospheric levels 350-450ppm)
For growers enriching CO2 levels: 500-1500ppm, we recommend up to 50 w/sqft.

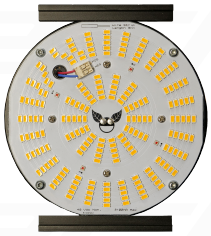
LOGIC / Driver / Space Combinations:

2x2: (2) LOGICS in parallel on HLG-185H-48.	200w @ 2.3µmol/J chip level
2x3: (2) LOGICS in series on HLG-240H-c2100.	200w @ 2.3µmol/J chip level
2x4: (3) LOGICS in parallel on HLG-320H-48.	319w @ 2.3µmol/J chip level
2x5: (4) LOGICS in parallel on HLG-320H-48.	319w @ 2.50µmol/J chip level
3x3: (4) LOGICS in parallel on HLG-320H-48.	319w @ 2.50µmol/J chip level
3x4: (6) LOGICS in series on HLG-480H-c1750.	505w @ 2.48µmol/J chip level
4x4: (6) LOGICS in parallel on (2)HLG-320H-48.	638w @ 2.3µmol/J chip level
4x4: (6) LOGICS in parallel on HLG-600H-48.	600w @ 2.3µmol/J chip level
4x5: (8) LOGICS in series on (2)HLG-320H-c1750	632w @ 2.48µmol/J chip level
4x5: (8) LOGICS in parallel on (2)HLG-320H-48.	638w @ 2.50µmol/J chip level
5x5: (9) LOGICS in parallel on (3)HLG-320H-48.	957w @ 2.3µmol/J chip level
5x5: (10) LOGICS in parallel on (2)HLG-480H-48.	1030w @ 2.38µmol/J chip level
5x5: (10) LOGICS in series on (2)HLG-480H-c2100.	1030w @ 2.35µmol/J chip level
6x6: (12) LOGICS in parallel on (2)HLG-600H-48	1200w @ 2.35µmol/J chip level
6x6: (16) LOGICS in parallel on (4)HLG-320H-48.	1276w @ 2.3µmol/J chip level

8x8: 2400w of above listed combinations
10x10: 3800w of above listed combinations

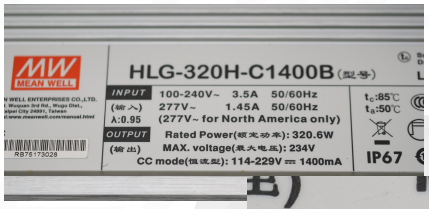
How many LOGICs on this driver?

For Series wired builds using Meanwell HLG-c drivers.

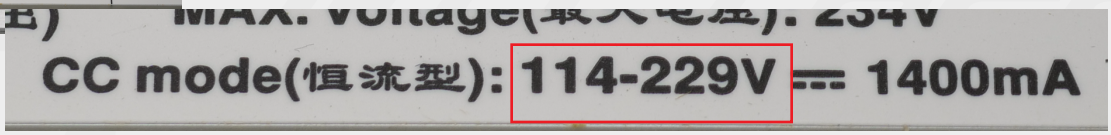


Use 48v for your calculations 1750-2300ma

Use 45v for 1400ma drivers and below.



HLG-320H-c1400B



Step 1: Locate your constant current 'c' series driver's DC output voltage.
this meanwell hlg-320h-c1400b has a constant current region of 114-229V DC.
this means that your LED voltage must add up to at least 114V but not exceed 229V
E.g. Three LOGIC boards at 45V each: 45V + 45V +45V = 135V DC.
Since 135v is within the range (114-229V) this driver will power the three LOGIC pucks at a constant 1400ma.

Step 2: To calculate the maximum number of LEDs a driver can power in series.
Take the maximum DC volts a driver will put out, in this case: 229V
229 volts divided by the voltage of our LED (45V) = 5.09

This driver will run (5) ChilLED LOGIC pucks.

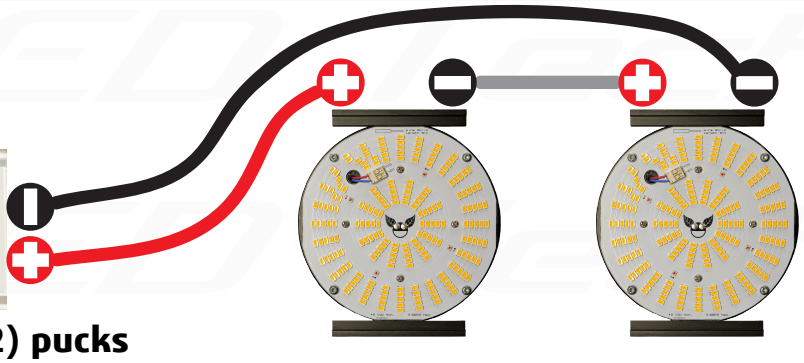
Step 3: to determine how many watts each puck will consume:
take the voltage of the puck (45v) multiply by
the driver current (1.4 amps) = 63 watts dc (1.4 amps is the same as 1400ma)

Step 4: total system wattage: take the total dc watts (63w) x # of leds (5) =315w
then add 5-8% for wattage lost to driver heat during the conversion of AC to DC power. 315w x 1.05 = 330w

Driver Compatibility

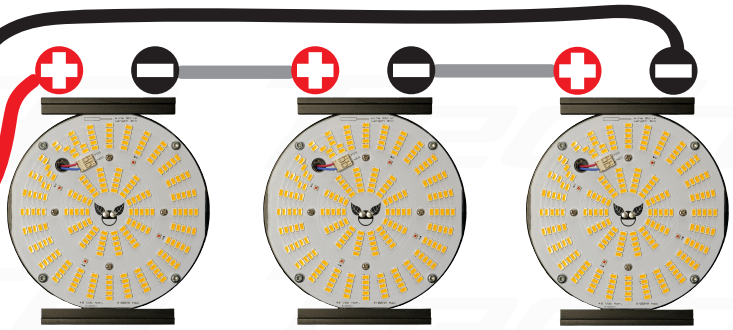
- for full list of compatible drivers, see the downloadable .pdf document on the Logic product page: www.chilledgrowlights.com

SERIES WIRING



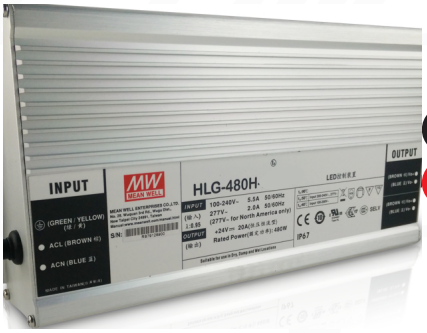
HLG-240H-c2100b in series (2) pucks

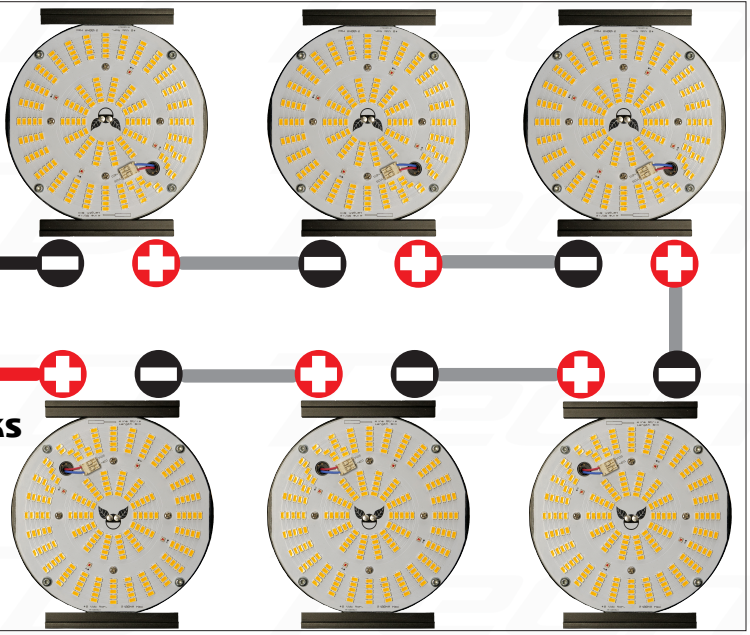
200w / 2.35µmol/J chip lvl / 2ft x 3ft coverage area



HLG-320H-c2100b in series (3) pucks

300w / 2.35µmol/J chip lvl / 2ft x 4ft coverage area





HLG-480H-c1750b in series (6) pucks

505w / 2.48µmol/J chip lvl

4ft x 4ft coverage area

PARALLEL WIRING

Drivers labelled HLG-185-48 , HLG-320-48 etc may be used for ChilLED LOGIC LED boards. The "48" suffix means that a driver will supply a constant 48 volts DC.
A given driver's DC current will be split equally* among the LEDs wired to it.

E.g. A driver has 6 amps dc available, if (3) pucks are used, each puck gets 2 amps of current.

If secure electrical connections are made, parallel wiring configurations can be used.

Advantages:
- 100% of a drivers capacity is utilized without requiring the user to make series voltage calculations.
- User may upgrade an LED system with more pucks, increasing efficiency without replacing the driver

Disadvantages: If a poor electrical connection is made, current is re-distributed to the remaining LEDs that are securely connected

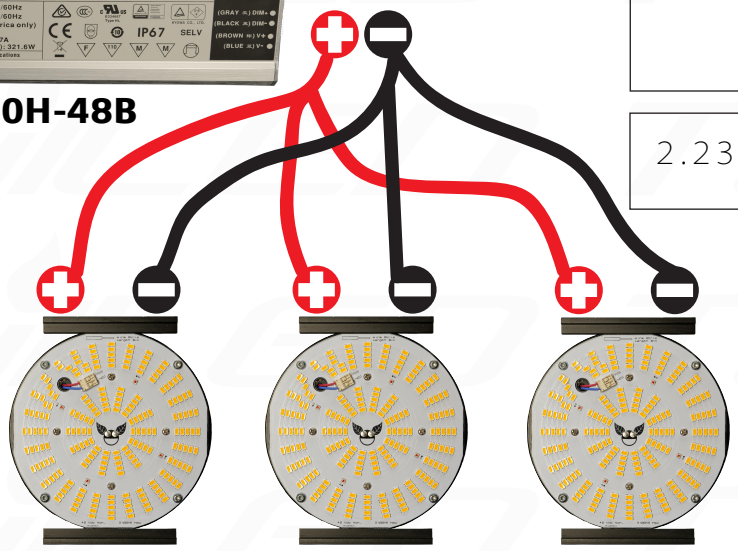
2 years ago I made a video warning people of the risks associate with parallel wiring COBs. Since then, I have done dozens of parallel wired led builds & projects. If a user is confident in their ability to make secure electrical connections, these risks are severely minimized.
IF NOT, stick to series builds.

HLG-320H-48B

48 volts DC | 6.7 amps (6700ma)

6.7a		
2.23a	2.23a	2.23a

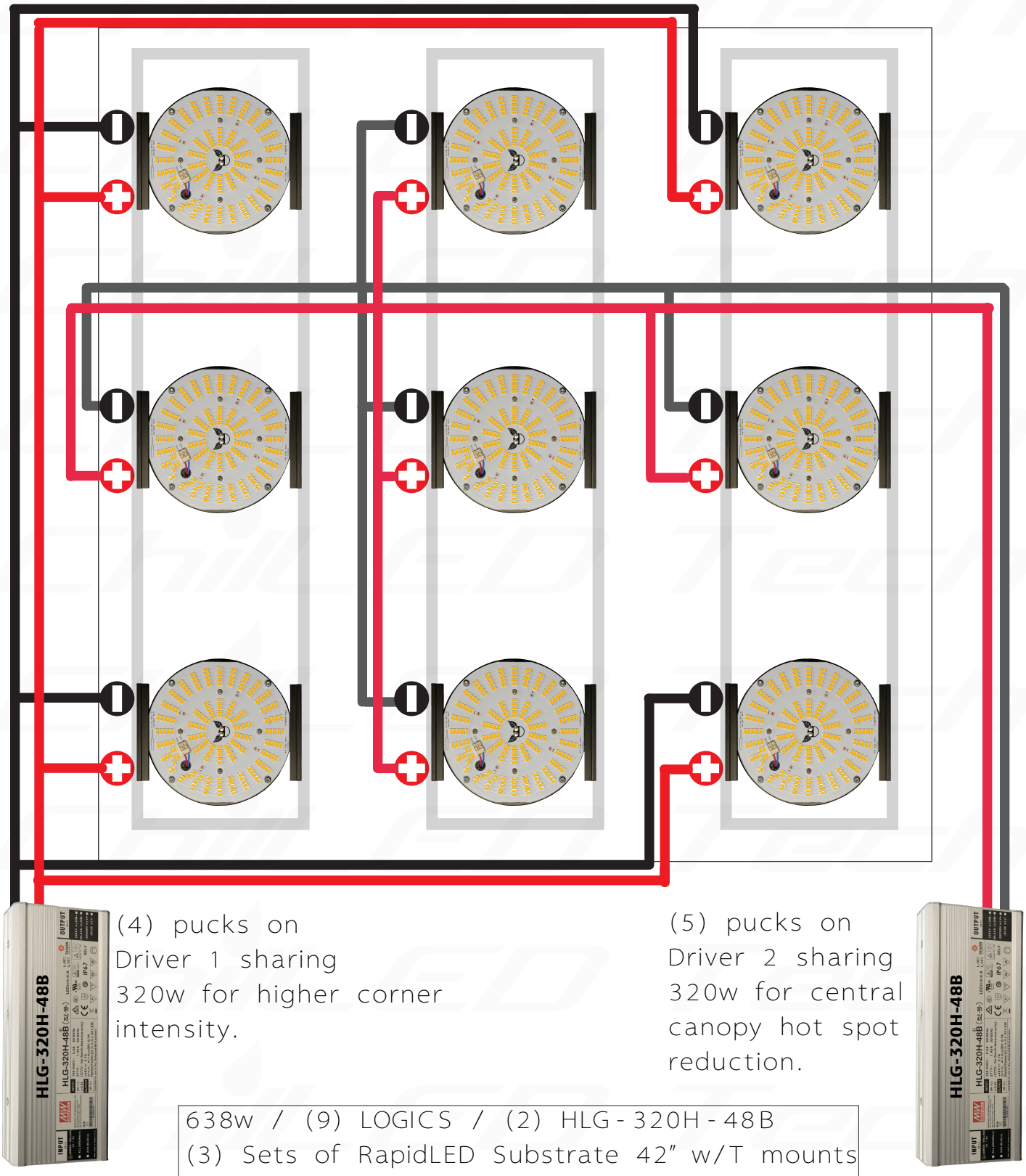
per puck



319w
2.3µmol/j
2ft x 4ft
coverage

Example Build: The Niner (parallel)

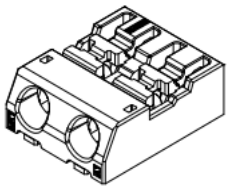
canopy: 48″ x 48″ (122cm x 122cm)



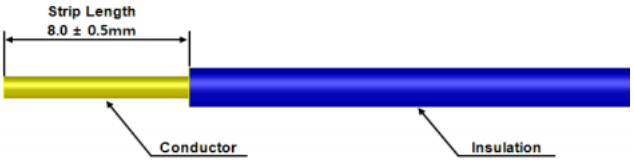
(4) pucks on Driver 1 sharing 320w for higher corner intensity.

(5) pucks on Driver 2 sharing 320w for central canopy hot spot reduction.

638w / (9) LOGICS / (2) HLG-320H-48B
(3) Sets of RapidLED Substrate 42″ w/T mounts
(9) 140mm pin heatsinks
18awg wire / WAGO221 asst. /14awg powercord



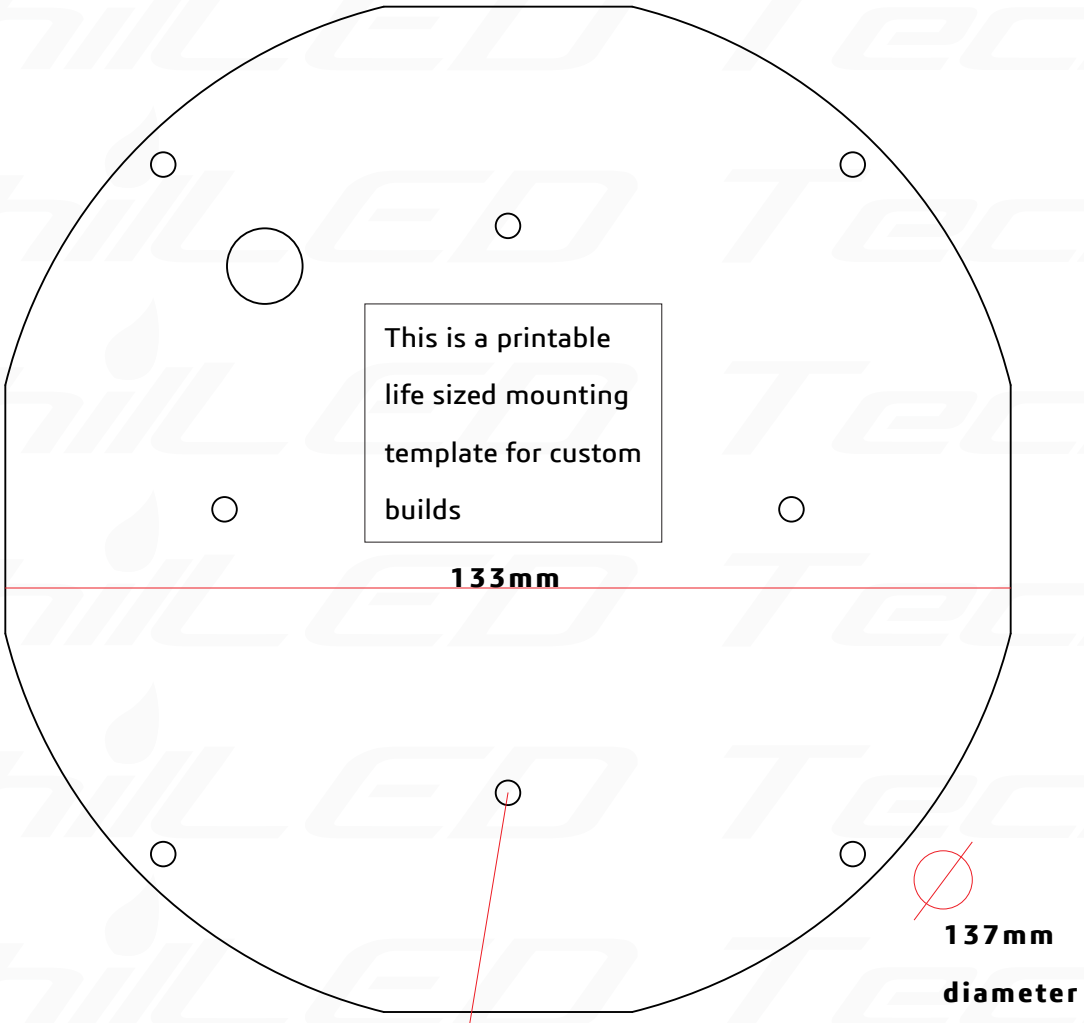
Solderless connector: Molex Lite-Trap
part number: 104188-0210



Wire Range AWG No.	Number of Conductors / Diameter of a conductors (Cross-sectional area of conductors / mm²)	Insulation Diameter (mm)	Conductor Type
24	1 / 0.51 (0.2mm²)	1.35	Solid
22	1 / 0.64(0.3mm²)	1.48	
20	1 / 0.81(0.5mm²)	1.65	
18	1 / 1.02(0.8mm²)	1.86	
22	17/0.76 (Reference) After soldering : Ø 0.9mm Max.	1.60	Strand
20	21/0.95 (Reference) After soldering : Ø 1.1mm Max	1.78	

- ✓ Stranded or Solid core copper wire is ok
- ✓ Must tin stranded wire for insertion
- ✓ Use 18-24 AWG
- ✓ For HLG185/240, use 20-22AWG
- ✓ For HLG320, use 18 or 20AWG
- ✓ For HLG600, use 18AWG & both DC outputs
- ✓ Use strip guide on the LED board (8mm)
- ✗ Do NOT use ROMEX residential wire
- ✗ Do NOT insert un-tinned stranded wire
- ✗ Do NOT strip wire over 8mm for insertion

Mounting LOGIC LED Board



Designed to accept m3 screws (based on LEDIL stella hole pattern)
Designed to fit central (4) hole pattern on RapidLED.com 140mm pin heatsink
For RapidLED 140mm pin heatsink the (4) central m3 screws are all that is necessary for even heat spread.

Thermal Interface Material (TIM)

You may use thermal paste or grease if you wish.
In our tests at max power (2300ma) we saw only a 2C reduction in operating temperature with TIM.
TIM is not required or necessary when using RapidLED 140mm pin heatsink
put a tiny dab behind each of the (4) red diodes for slight performance incr.

Parts

ChilLED Logic LED boards: www.chilledgrowlights.com

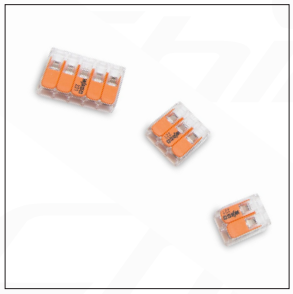
140mm pin heatsinks: www.rapidled.com/pin/

Substrate Rail Mounting System: www.rapidled.com/substrates

Drivers: www.rapidled.com/dimmable-drivers/

Drivers: www.onlinecomponents.com

wires & connectors



wago assortment pack https://amzn.to/2J4kzWS

Shaxon Solid core 18AWG https://amzn.to/2qENla2

18AWG Stranded Red/Blk https://amzn.to/2J5mvhM

8FT US 120VAC power cable https://amzn.to/2qHhqES

www.rapidled.com : coupon code : growmau5

⚠️ Warnings ⚠️

1. If your pin heatsink has a large wire through hole (like the RapidLED 140mm) always direct your wiring through this hole. It acts as a strain relief protecting the molex connector & the wiring from the heat generated by the perimeter leds. Most importantly, this is the intended design of the LOGIC pcb.

2. NEVER adjust, wire, test, or make AC or DC connections while your LED driver is energized with wall power. Wait 10-30 seconds after unplugging any LED driver before handling the DC side. Capacitors and other electronic components inside your driver may still contain a charge.

3. NEVER "hot swap DC" users that implement quick connect systems between their LED driver and the string of LEDs must ensure that this connection is solid. Loose connections allow LED drivers to build up energy when not under load. This energy can be rapidly discharged, damaging LED components once the LED load is restored. ALWAYS UNPLUG YOUR LED DRIVER FROM THE WALL WHEN MAKING ANY ADJUSTMENT!

4. Do not over tighten screws. m3 screws used commonly in applications such as this require 0.5 newton meters(Nm) or 0.3 pound feet (lb ft) of torque. This amount of force can be applied by your index finger & thumb on a screw driver. If you are gripping your tool with your entire hand, this is likely too much torque for an m3.

5. Always make sure that you wire ALL of your intended LEDs to your driver before testing your build. Many users wire only ONE LED to a driver that can run 3,4,5 LEDs. When they plug in their driver for testing, this single led blows. Finish your wiring, then test. This is critical for both series & parallel configurations!

6. Use common sense & don't eat Tide Pods.

7. GOOD LUCK WITH YOUR BUILD!

ChilLED Tech