

IR LIGHT BARS V1.0
ASSEMBLY GUIDE

FREE TO ALL FOR NON-COMMERCIAL USE
V0.1 APRIL 2025 - SEE BLAMCON.COM FOR LATEST VERSION

INTRODUCTION

All Infrared light guns require emitters to operate, as do our Blamcons, the front of the light gun is an IR positioning camera that uses the emitters to track its position in 3D space.

There are 3 main configurations for these LEDs: Blamcon bars. Four corners, and crosshair. Blamcon works with all three of these configurations, but we highly recommend the Bamcon bars as they have the best balance of ease of use and tracking area.

To use crosshair and four corners you need to use 4 Blamcon IR modules and for the Blamcon Bars you just need two blamcon IR bars, which have two emitters build into each. There is one moreoption, for those using 120in projectors or above, and that's mega bar.





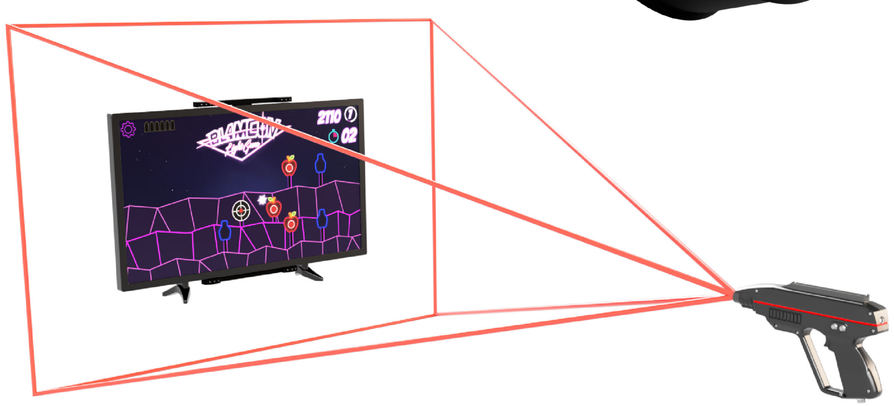


FEATURES

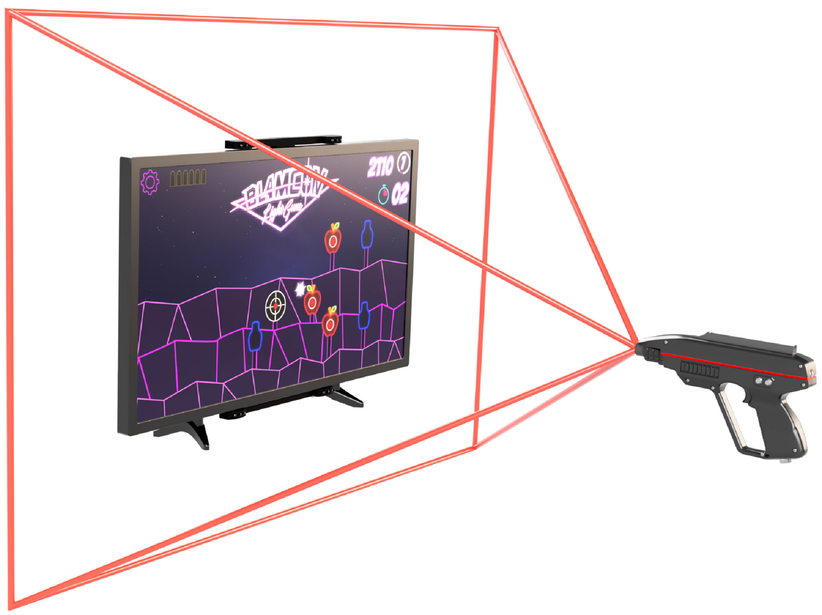
- Options to support ALL ir based light guns
- High Powered LEDs for the best play experience
- powered from a single 500ma USB port or 5V
- Blamcon bars are easy to use and install
- Blamcon modules Support multiple LED configurations
- Multiple mounting options to fit your needs
- Complete DIY or use premade Blamcon emitters

Disclaimer: This 3D model is provided FREE AS IS with no warranties by props3d.pro. This model is for Non-commercial use ONLY and pre-built light guns and kits are only authorized by Blamcon.com and the providers listed on Blamcon.com. This manual will discribe in brief how to assemble this Functional Light Gun. if you need more help or just want to engage with fellow makers join on the Props3D.pro discord, link on the site. Have fun!

BLAMCON IDEAL PLAY DISTANCES



(Light gun withthout lens)



(Light gun with lens)

TO LENS OR NOT TO LENS

The IR camera used in Blamcon is 4:3 at 30 degrees. Adding a lens to your light gun will give it 64 degrees. While this is good for playing closer it reduses accuracy at long ranges and can intruduce some distortion, which can be corrected for in Blamcon ARC.

LIGHT GUN CALIBRATION DISTANCES

Note that you can get closer after calibration as Blamcon uses predictive tracking to keep a smooth operation even when it can only see two ir points. The distances below are the distances were the camera sees 4 points at all times, including the corners.

TV SIZE	DISTANCE	WITH LENS
24"	1.3M	.6M
32"	1.5M	.8M
43"	2.3M	1M
55"	2.6M	1.1M
65"	3.1M	1.3M
75"	3.8M	1.6M
85"	4M	1.7M
105"	4.9M	2.1M
120"	5.6M	2.4M



BLAMCON MODULE WIRING

IR sensors are wired in 4 banks of 3 LEDs.

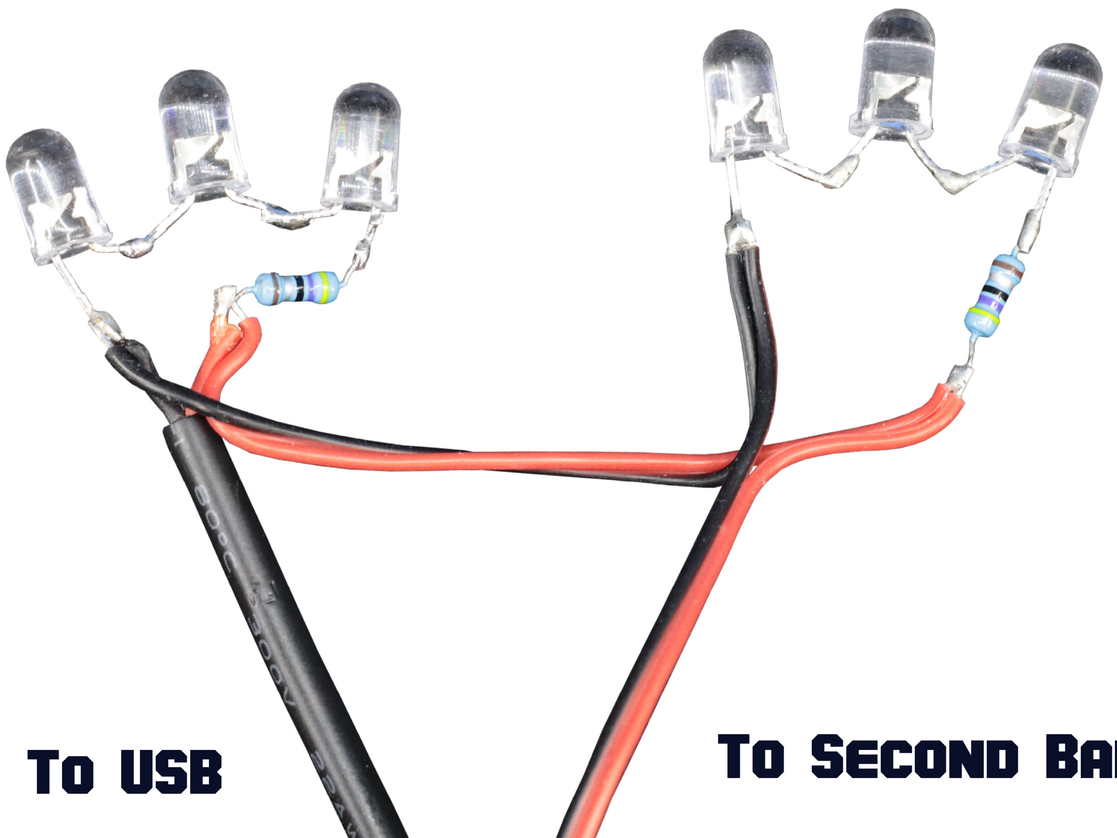
Each bank is in series and wired together in parralel.

Series adds voltage: 1.5V X 3 = 4.5V

Parralel adds current: 100mA X 4 = 400mA

Total draw: 4.5V at 400mA or aprox 2W

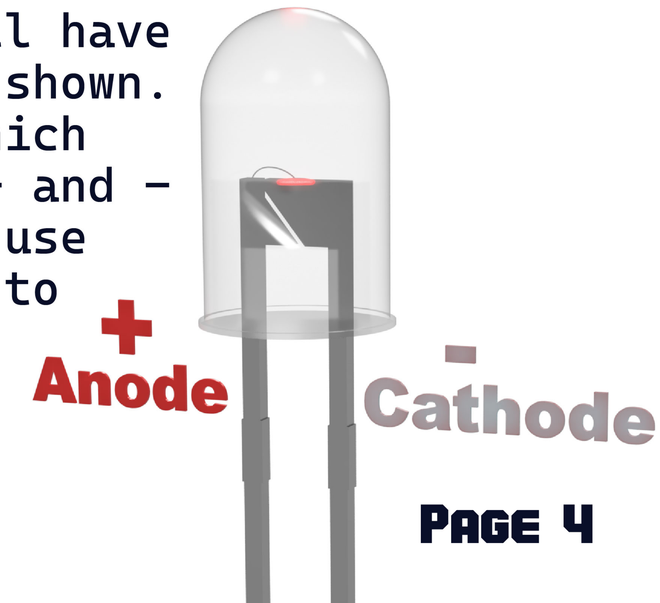
This is inside the capabilities most USB power sources, please be sure to use the correct usb power source for best effect.



DIY MODULE WIRING

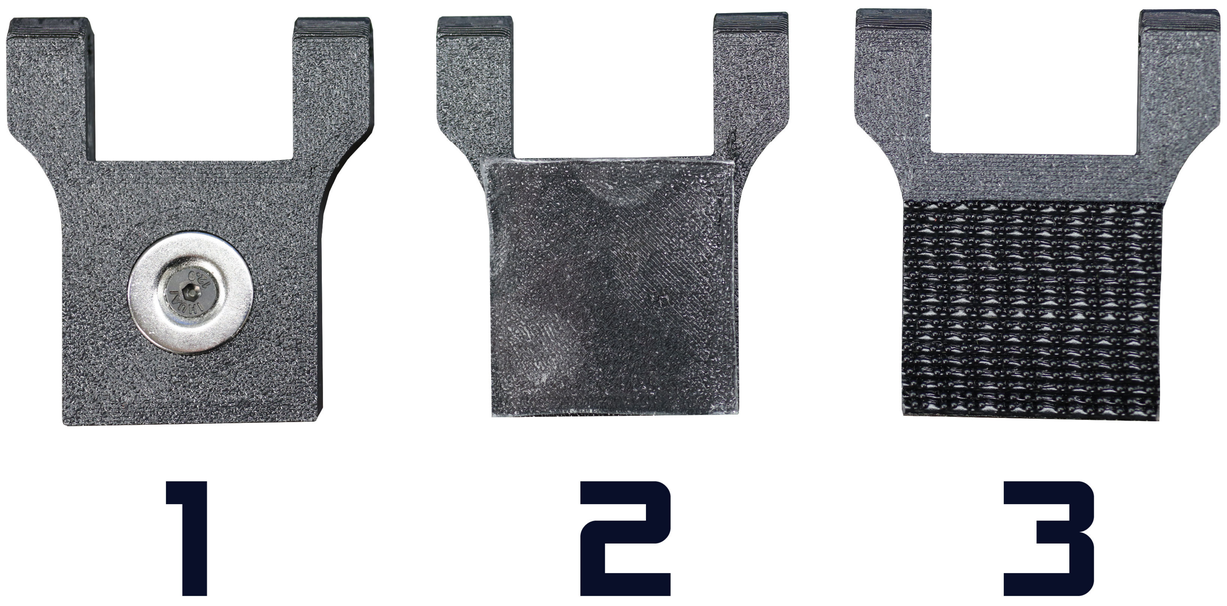
DIY wiring has no PCB so you have to wire them yourself. Cut the LED legs to 6mm to make sure they fit in the module.

The wiring itself follows the guide above but you'll have to do it manually as shown. Make sure you know which side if your LED is + and - before soldering and use the correct resister to avoild burnout.





(Blamcon Bar mounts shown)



(Blamcon Module mounts shown)

MOUNTING OPTIONS

There are three mounting options for Blamcon bars and modules:

1. Magnetic: Uses a 15mm X 3mm rare earth magnet, easiest to remove but requires a metal surface. You can buy metal plates for your monitor if it’s plastic.

2. Double sided tape: The easiest and most reliable mounting. If you’re not sure what to use this is the easiest.

3. 3M Dual lock: Like super velcro a little hard to stick on and off but it’s a great way to get an easy removable mount.

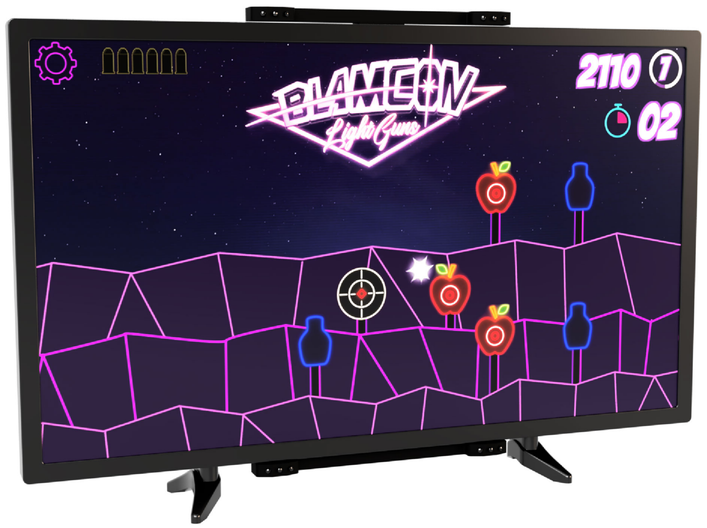
MOUNTING BUILD DIRECTIONS

1. Magnetic: The hole may be tight, use a 2.5mm drill to size it. Insert the magnet cone side out and screw an m3x8mm flat head screw to secure.

2. Double sided tape: We reccomend "Alien tape brand double tape. fit horizontally, the width should be perfect but tim the ends to fit as in the picture

3. 3M Dual lock: Cut the dual lock flush and Apply horizontally. Cut flush on the other side with scissors.

CHOOSING YOUR IR ARRANGEMENT



BLAMCON BARS - PAGE 9 TO 12

If you are building a Blamcon, the bars are by far the best way to go. They will give you the best play area and are the easiest to mount properly. bars are easy to center and are the cleanest way to set up your ir emitters.



EDGE PATTERN - PAGES 13 TO 18

Edge Pattern is for third party compatabiliy. Single sensors also allow you to move them around if you want multiple 3rd party support. using this config gives you less lateral play area so we reccomend moving these to blamcon bar spacing, 250mm, if you do. The build guide for this starts AFTER the bars section.



CROSSHAIR PATTERN - PAGES 13 TO 18

crosshair pattern is for compatability with third party systems and is the hardest to mount. We do not reccomend using this config only for Blamcon. Make sure you change your IR settings to crosshair in the free Blamcon ARC utility on steam.

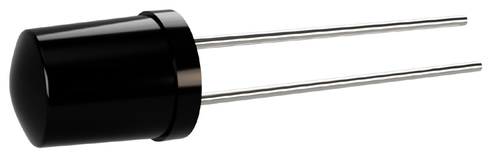
BLAMCON IR PARTS LIST

FOR BARS AND EMITTERS



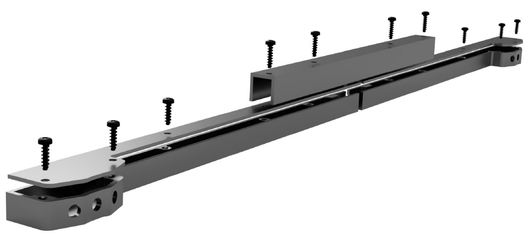
BLAMCON IR EMITTER

Blamcon IR Emitters are ready to go and designed to fit Blamcon IR bars and modules with a click fit. Just add 5v and they’re ready to go! (need 4)



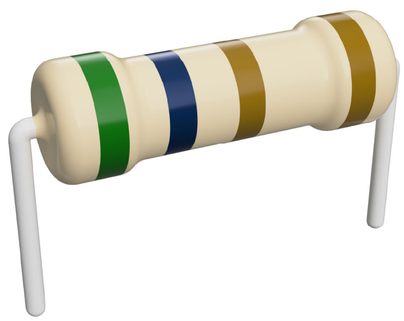
IR LED DIY

No Blamcon IR Emitter only!
12 x 60deg 940nm IR LEDs
We reccomend Osram SFH4547 IR LEDs for best performance.



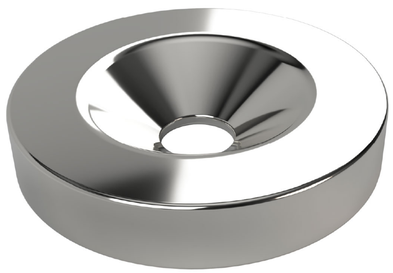
USB CABLE

Any USB cable will work for this project. We reccomend buying a 1M USB power only cable as they’re long enough and easy to work with.



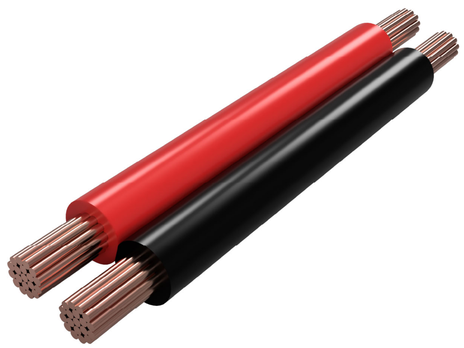
RESISTER DIY

No Blamcon IR Emitter only!
4x 5.6r resisters for SFH4547.
The value may change depending on the IR LED you use.



MAGNET

15mm x 3mm round rare earth magnet. If your TV is not metal you can get sticky metal mounts this is the easiest way to make your light bars removable. in rare cases this can affect your monitor, be warned!



28GA WIRE

180cm for 120in TV
(measure to fit your TV)

26cm X2 for inside bar wire

BLAMCON EMITTERS PARTS LIST

FOR BARS AND EMITTERS



PAN HEAD SCREW

BLAMCON BARS
M3x6~10mm X 12
M3x12mm X 4

BLAMCON MODULES
M3x6~10mm X 8
M3x12mm X 8

BLAMCON MEGA BARS
M3x6~10mm X 12
M3x12mm X 12



FLAT HEAD SCREW

BLAMCON BARS
M3x6 X 2

BLAMCON MODULES
M3x6 X 4

BLAMCON MEGA BARS
M3x6 X 2

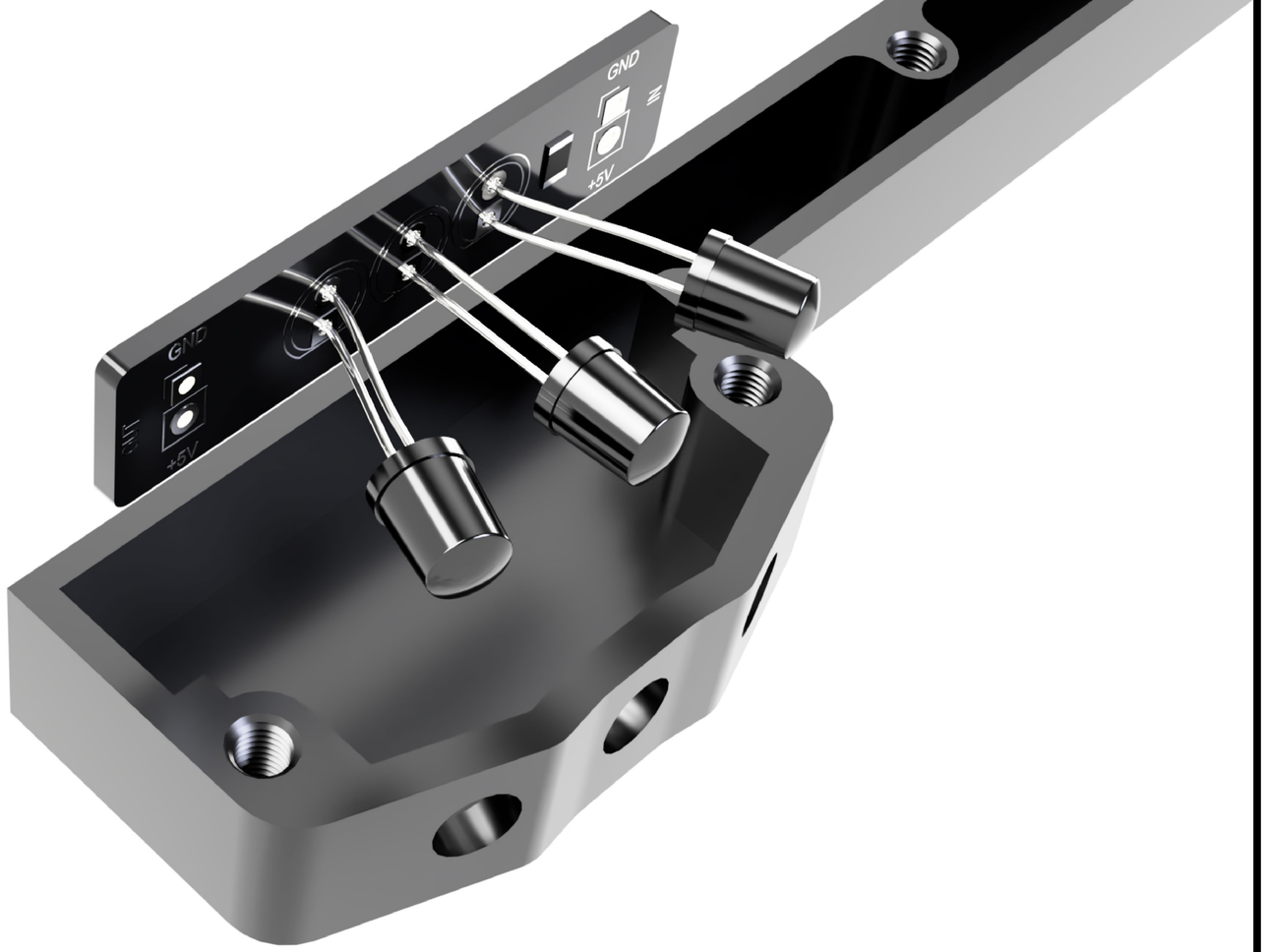


CAP HEAD SCREW

BLAMCON BARS
M3x20mm X 4

BLAMCON MODULES
M3x16mm X 8

BLAMCON MEGA BARS
M3x20mm X 4



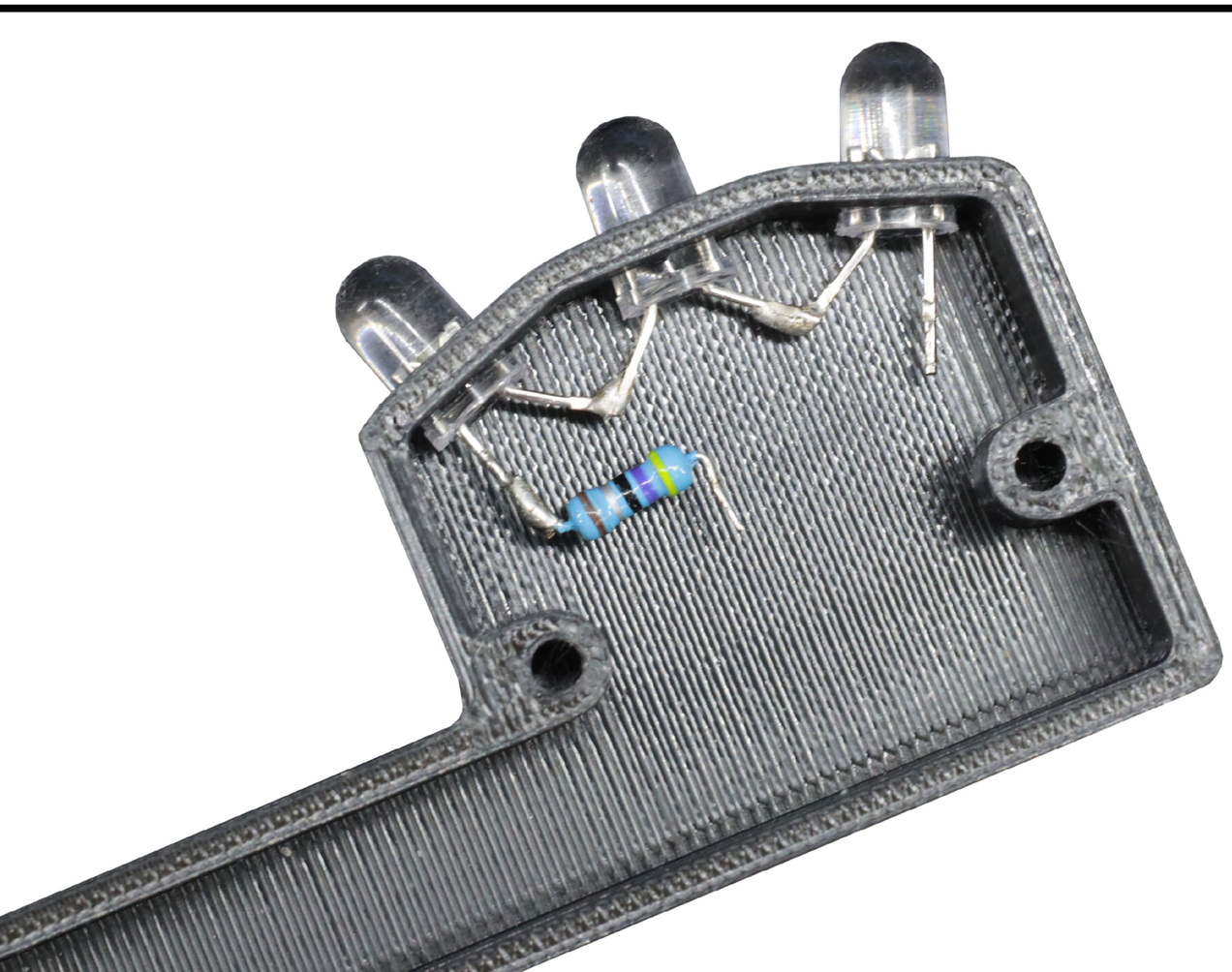
1. PREPARE THE BLAMCON MODULES

PARTS

- 4X Blamcon Modules
- 2X Blamcon_IR_BlamconBar_V1

STEPS

1. Using a flat blade screwdriver bend the outside LEDs to match the holes in the light bar. Be careful to bend at the base of the module only.
3. Dry fit the LEDs into the light bar to ensure the angle is correct. They should snap in place securly into the slot in the light bar. Using a flat blade screwdriver can help, be careful.



2. PREPARE THE DIY MODULES

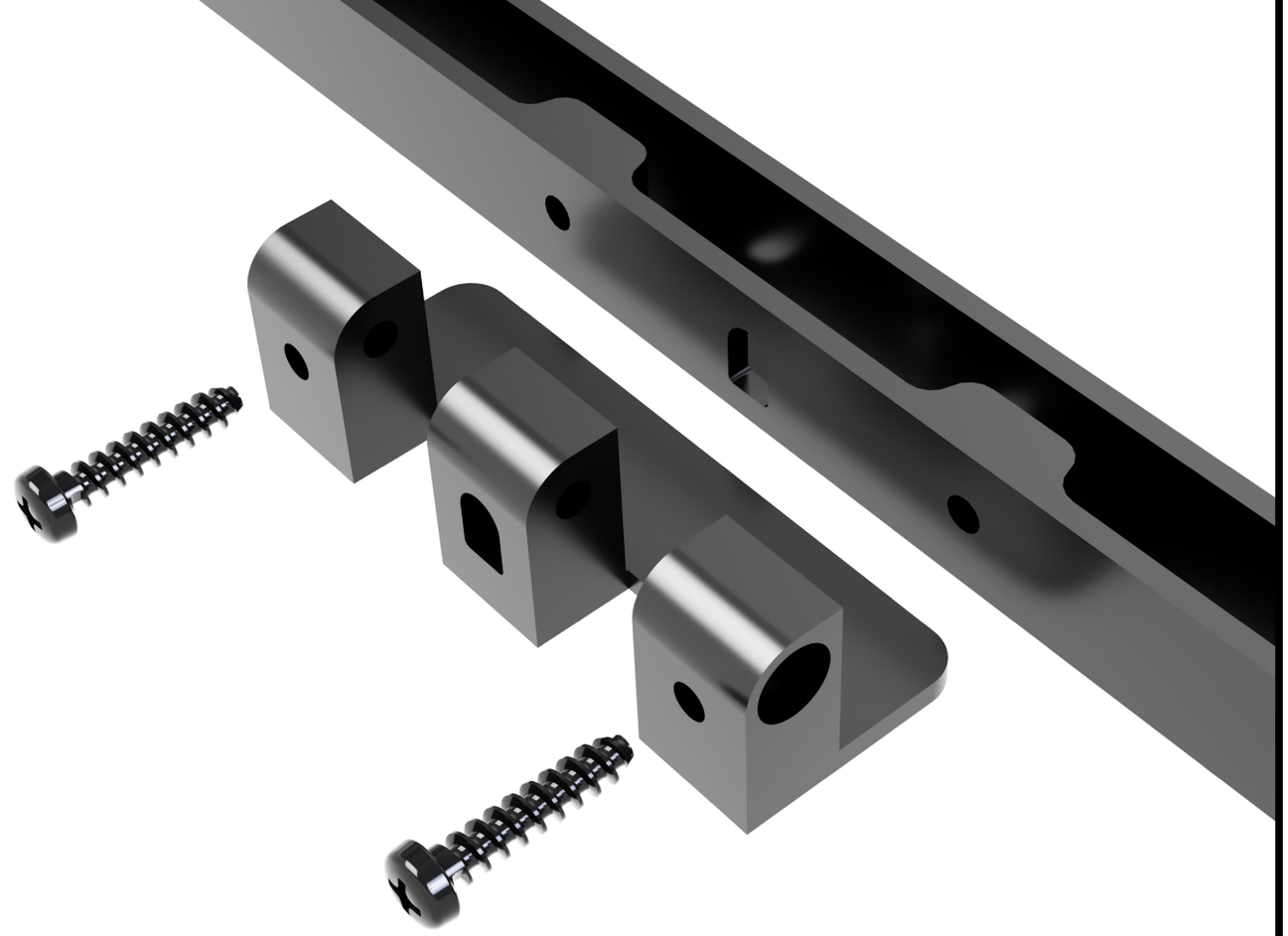
PARTS

940nm LEDs X 12
Resister X 4
Blamcon_IR_DIYBar

STEPS

1. Cut the legs on the IR LEDs to 6mm.
2. Insert the LEDs into the light bar, pos to neg, and bend the interior legs in 45 degrees.
3. Solder the interior legs together.
4. Add the LED to the first positive LED.

Note: From here on the manual will follow the Blamcon Light Bar build but the steps are the same.



3. INSTALL THE MOUNT

PARTS

- M3X12mm Pan Head Screw X 4
- Blamcon_IR_BlamconBar_Mount X 2

STEPS

1. Screw the M3X12mm Pan head screws into Blamcon_IR_BlamconBar_Mount until the are just about sticking out.
2. Place Blamcon_IR_BlamconBar_Mount flush against the light bar and screw them the rest of the way in



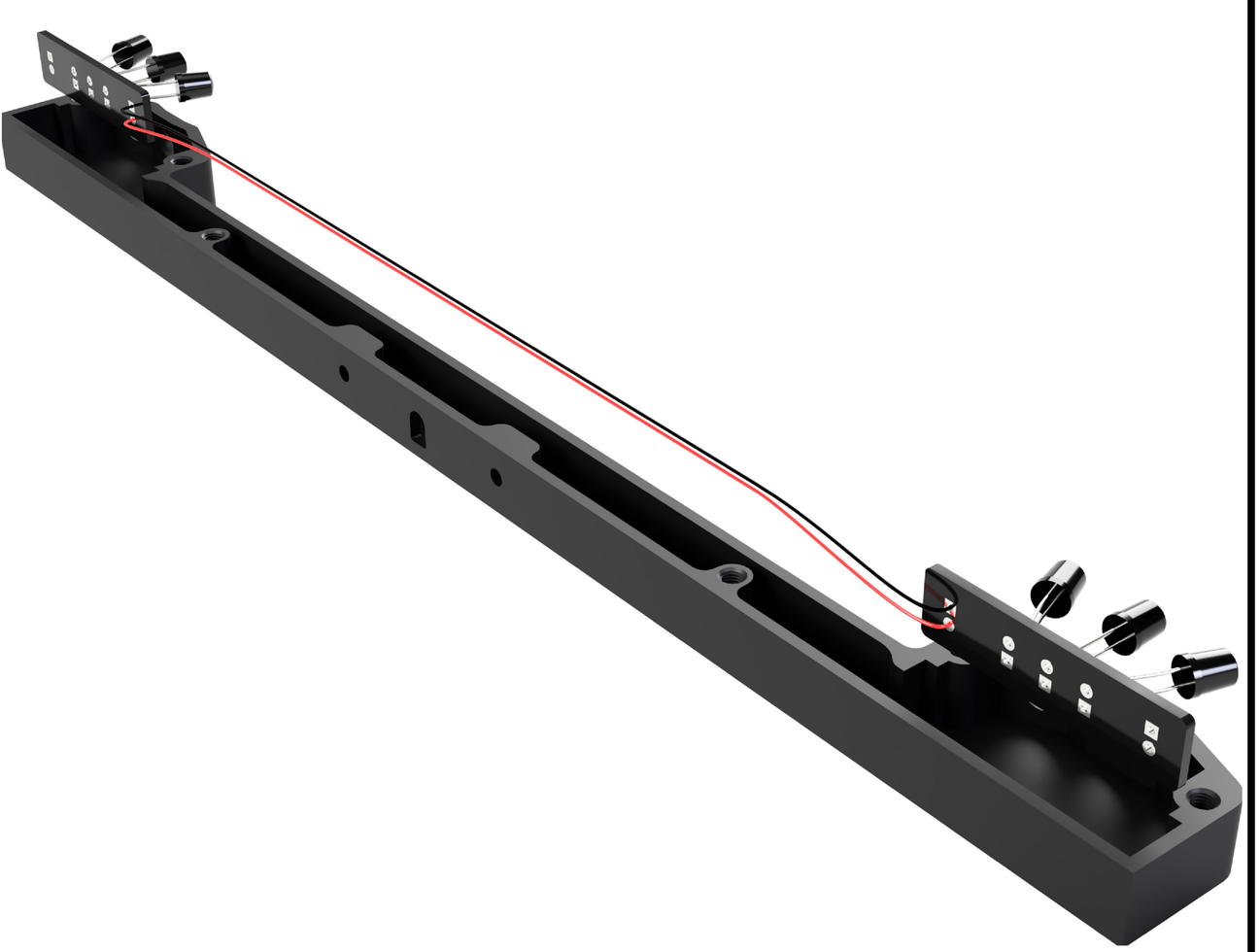
4. INSTALL THE ADJUSTABLE MOUNT

PARTS

- M3X20mm Cap Head Screw X 4
- M3X8mm Flat head screw if magnetic X 2
- Blamcon_IR_BlamconBar_Arm X 2 or
- Blamcon_IR_BlamconBar_ArmDualLock X 2 or
- Blamcon_IR_BlamconBar_ArmMagnet X 2

STEPS

1. Choose which adjust able mount arms you want to print: flat/magnetic/dual lock and angle/flat.
2. Screw your arm to Blamcon_IR_BlamconBar_Mount at both ends until the head of the screw is flush with the mount.
3. If magnetic, insert the magnet into the hole and screw in the 8mm flat head screw.



5. WIRE THE FIRST BAR

PARTS

- 26cm wire X 2
- Blamcon Modules

STEPS

1. Solder the wire to connect each module, be careful of the polarity, remember this is parralel so neg to neg, pos to pos.
2. Repeat for the second bar.



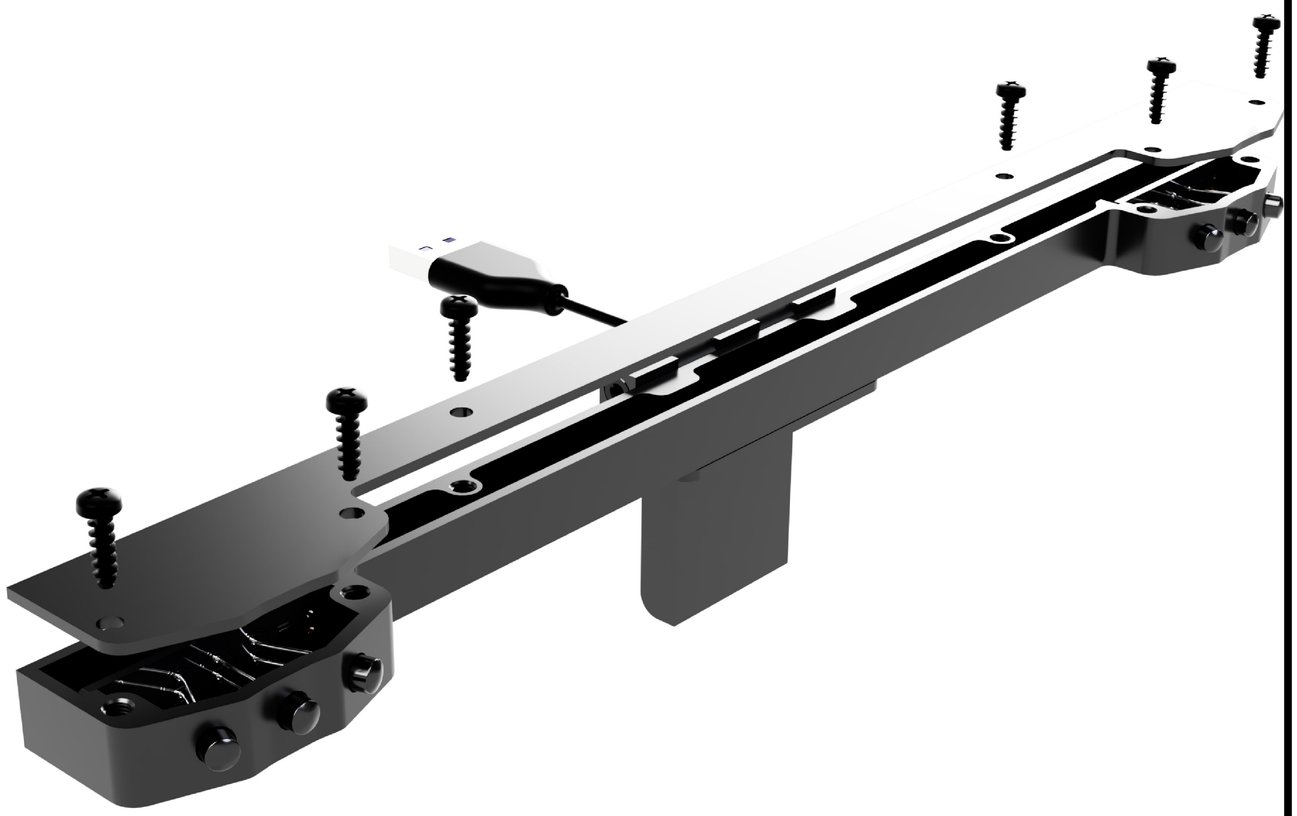
6. COMPLETE THE WIRING

PARTS

- USB Cable
- Long Wire

STEPS

1. Insert the USB cable and connecting wire through the hole BEFORE soldering. Solder the USB cable to one side, the connecting wire through the other. Watch the polarity!
2. Insert the connecting wire though the hole in the second bar and solder it to either end.



7. ADD THE TOPS

PARTS

- M3x6~10 Pan Head Screw X 12
- Blamcon_IR_BlamconBar_Cover
- IRLED_DIY_Retainer (for DIY)

STEPS

1. For Blamcon Module make sure they are clipped fully in place, you may have to snap them in place but they will sit flush
2. For DIY LEDs make sure IRLED_DIY_Retainer is locked in place, see the render on page 14.



8. TESTING AND DEBUGGING

PARTS

- Your new finished light bars!

STEPS

1. Plug the USB into a power source that can output 500ma or more. Use a phone camera to see them.
2. No LEDs: Check the polarity of the first module and the LEDs connected to it.
3. One or more LED on a module is not working: The Not working LED is backwards
4. Some modules work, some don’t: The ones that don’t probably have a reversed pos/neg wire, switch them around.



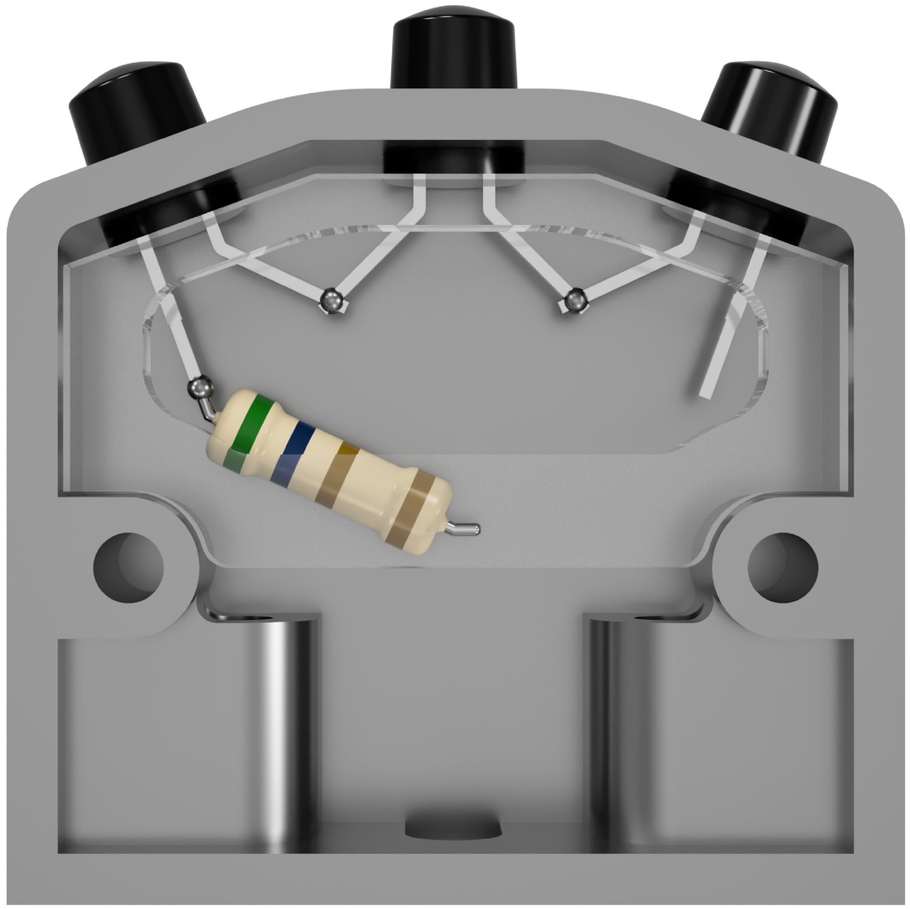
1. PREPARE THE BLAMCON EMITTERS

PARTS

- 4X Blamcon Emitters
- 4X Blamcon_IR_BlamconEmitter

STEPS

1. Using a flat blade screwdriver bend the outside LEDs to match the holes in the emitter. Be careful to bend at the base of the module only.
3. Dry fit the LEDs into the emitter to ensure the angle is correct. They should snap in place securly into the slot in the emitter. Using a flat blade screwdriver can help, be careful.



2. PREPARE THE DIY COMPONENTS

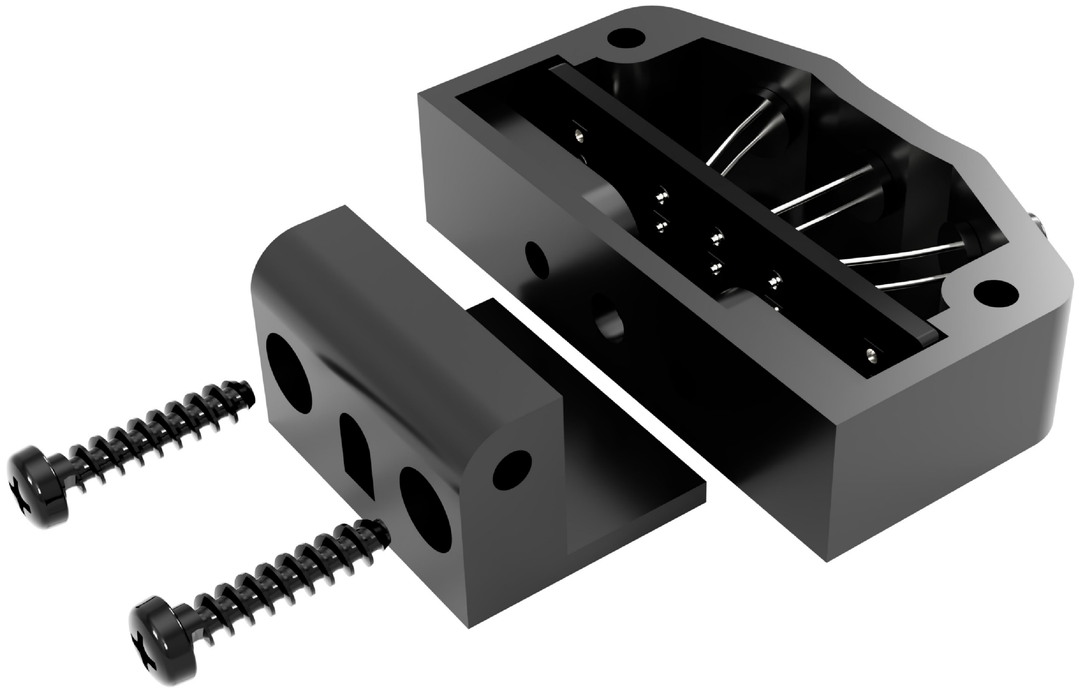
PARTS

- 940nm LEDs X 12
- Resister X 4
- Blamcon_IR_DIYEmitter

STEPS

1. Cut the legs on the IR LEDs to 6mm
2. Insert the LEDs into the emitter, pos to neg, and bend the interior legs in 45 degrees.
3. Solder the interior legs together.
4. Add the LED to the first positive LED.

Note: From here on the manual will follow the Blamcon Emitter build but the steps are the same.



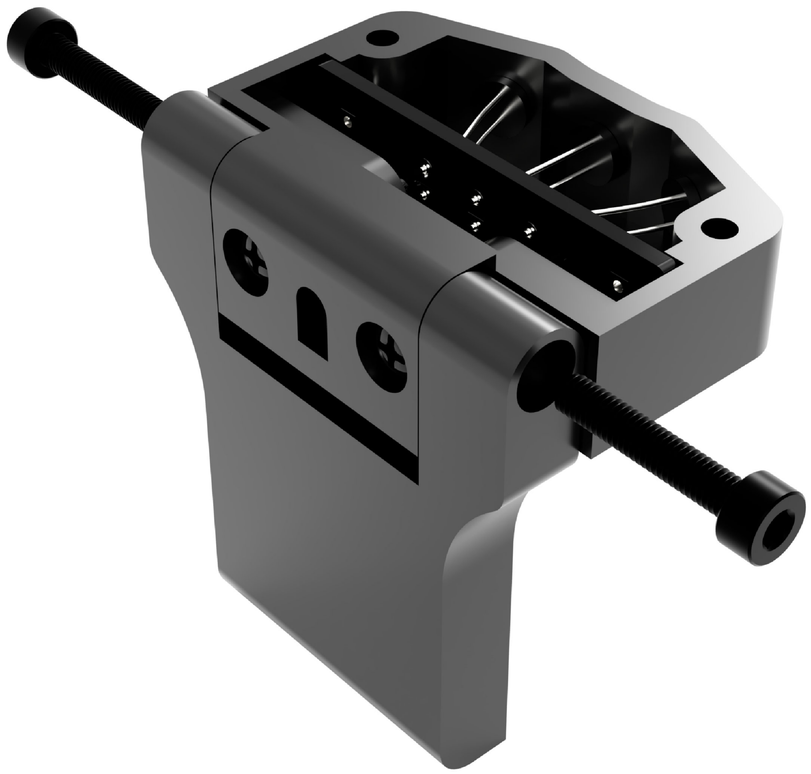
3. INSTALL THE MOUNT

PARTS

- M3X12mm Pan Head Screw X 8
- Blamcon_IR_BlamconEmitter_Mount X 4

STEPS

1. Screw the M3X12mm Pan head screws into Blamcon_IR_BlamconEmitter_Mount until the are just about sticking out.
2. Place Blamcon_IR_BlamconEmitter_Mount flush against the emitter and screw them the rest of the way in



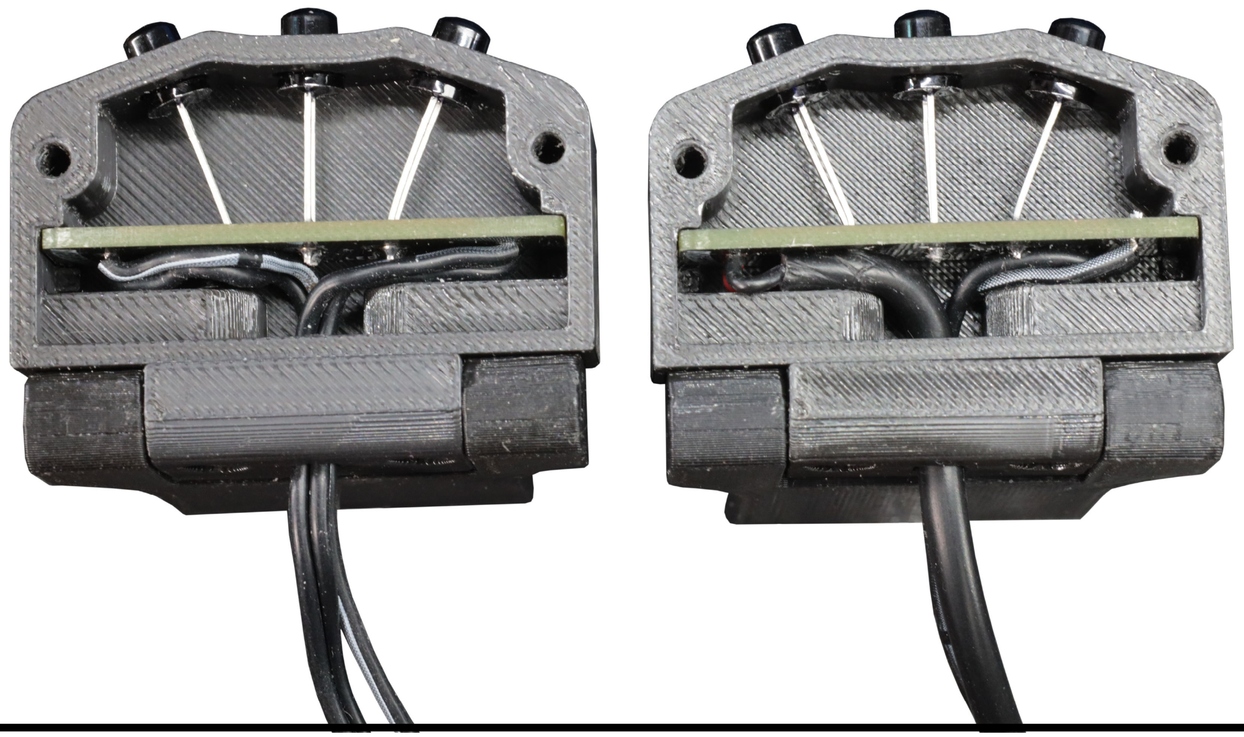
4. INSTALL THE ADJUSTABLE MOUNT

PARTS

- M3X16mm Cap Head Screw X 8
- M3X8mm Flat head screw if magnetic X 4
- Blamcon_IR_BlamconEmitter_Arm X 4 or
- Blamcon_IR_BlamconEmitter_ArmDualLock X 4 or
- Blamcon_IR_BlamconEmitter_ArmMagnet X 4

STEPS

1. Choose which adjust able mount arms you want to print: flat/magnetic/dual lock and angle/flat.
2. Screw your chosen arm to Blamcon_IR_BlamconEmitter_Mount at both ends until the head of the screw is flush.
3. If magnetic, insert the magnet into the hole and screw in the 8mm flat head screw.



5A. WIRE THE BLAMCON MODULES

PARTS

- Connecting wire X 4
- Blamcon Modules X 4
- 1M USB Cable

STEPS

1. Measure your TV for your desired LED mounting and cut wires to length, add bit extra!
2. On the FIRST module, solder the USB cable to one end and a connecting wire to the other.
3. Solder the wire to connect each module, be careful of the polarity, remember this is parralel so neg to neg, pos to pos. Use page 4 as a guide.



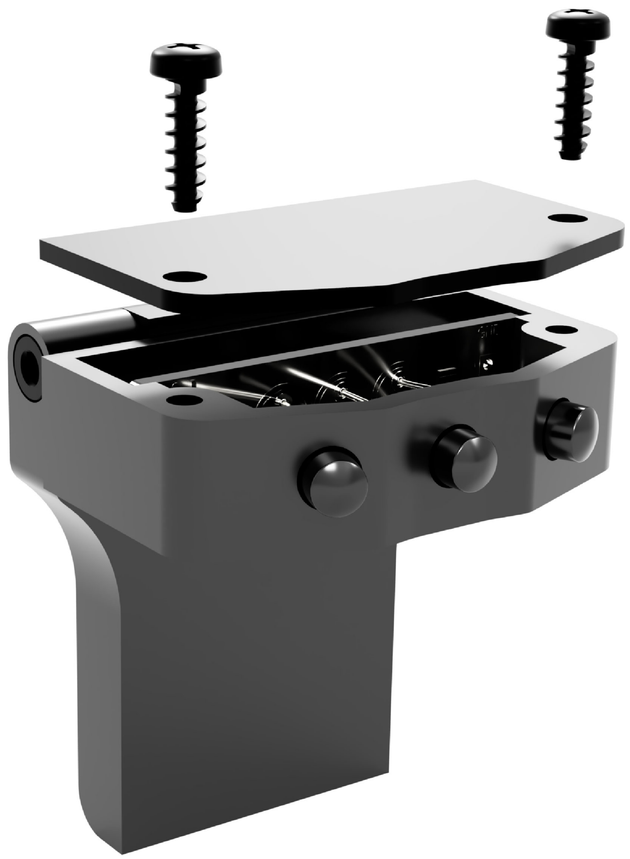
5B. WIRE THE DIY MODULES

PARTS

- USB Cable
- Long Wire

STEPS

1. Measure your TV for your desired LED mounting and cut wires to length, add bit extra!
2. On the FIRST module, solder the USB cable each end and solder the connecting wire to that. See the image on P4 as a guide.
3. Solder the wire to connect each module, be careful of the polarity, remember this is parralel so neg to neg, pos to pos.



6. ADD THE TOPS

PARTS

- M3x6~10 Pan Head Screw X 8
- Blamcon_IR_BlamconEmitter_Cover
- Blamcon_IR_DIYEmitter_Cover (for DIY)

STEPS

1. Make sure Blamcon Emitters are clipped fully in place, you may have to snap them in place but they will sit flush
2. For DIY LEDs make sure IRLED_DIY_Retainer is locked in place, see the render on page 13.



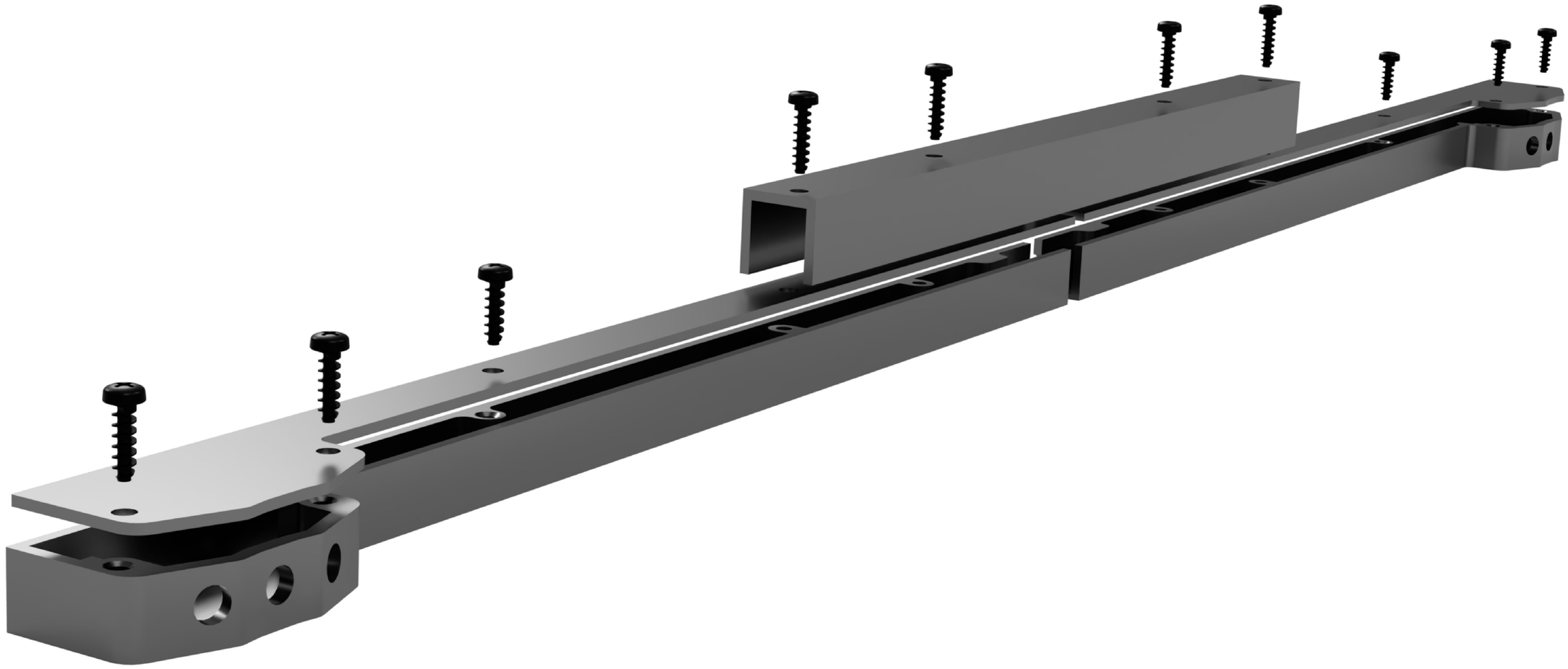
7. TESTING AND DEBUGGING

PARTS

- Your new finished IR LED Modules!

STEPS

1. Plug the USB into a power source that can output 500ma or more. Use a phone camera to see them.
2. No LEDs: Check the polarity of the first module and the LEDs connected to it.
3. One or more LED on a module is not working: The Not working LED is backwards
4. Some modules work, some don’t: The ones that don’t probably have a reversed pos/neg wire, switch them around.



1. BUILDING THE MEGABAR

PARTS

- M3x6~10 Pan Head Screw X 12
- M3x12mm Pan Head Screw X 12
- Blamcon Modules X 4
- 1M USB cable
- 50cm 28ga 2 strand wire X2
- 28ga 2 strand wire long enough for TV
- IRLED_MegaSensorBar_BlamconPCBBridge X 2
- IRLED_MegaSensorBar_BlamconPCBRight X 2
- IRLED_MegaSensorBar_BlamconPCBLeft X 2
- IRLED_MegaSensorBar_BlamconPCBTopRight X 2
- IRLED_MegaSensorBar_BlamconPCBTopLeft X 2
- IRLED_Retainer X 4 (for DIY)

STEPS

Follow the Direction to build the Blamcon IR Bar on pages 9~12 except:

1. IRLED_MegaSensorBar_BlamconPCBBridge is used to connect the two halves together, this requires
2. 4 M3X12mm pan head screws to attach each one.
3. A 50CM 2 strand wire is needed to connect the modlues together.