

## Arlo Robot Base Kit (#28960)

The Arlo Robot Base Kit includes an Arlo Base and a Double Battery Shelf. It also includes mounting hardware for attaching our Motor Mount and Wheel Kit -AL (#28962, aluminum) or -MP (#28963 molded HDPE plastic), and two of our Caster Wheel Kit Rev. B's (#28961); each sold separately.

The Arlo Robot Base is cut from solid blocks of high-density polyethylene (HDPE). Ideal for medium-sized robotics system development; the components used in this product work well in both indoor and outdoor environments.



### Features

- Precision machined HDPE (High Density Polyethylene) Base Plate with pre-drilled and counter-sunk mounting holes
- Under-deck Double Battery Shelf and hardware included for both single and double battery mounting and retention
- Black HDPE Double Battery Shelf is designed to carry one or two 12 VDC, 8 amp-hour, SLA batteries (such as PowerSonic #PS-1290 or Werker #WKA12-8F2). You can also mount any type of battery to the shelf by using your own hardware.
- Pre-drilled to mount up to twenty ultrasonic and/or infrared sensor stands, include PING))) (#725-32008), Infrared (#725-28995), and Dual PING)))/IR (#725-28998).
- Extremely durable, yet easily drilled, cut, or modified to suit your design preferences and application requirements (tips on how to work with HDPE are included below)
- Base Plate is 0.375" (0.95 cm) thick x 17.875" (45.09 cm) diameter for approx. 220 sq. in of usable surface area
- Double Battery Shelf measures 0.375 x 7.0 x 13.25 in (0.95 x 17.78 x 33.66 cm), with a battery containment area of 2.625 x 8.00 x 6.75 in (6.67 x 20.32 x 17.15 cm)
- Weighs 3.85 lbs (1.75 kg) without batteries

### Bill of Materials

| Part #    | Quantity | Description                                 |
|-----------|----------|---|
| 765-28960 | 1        | Arlo Robot Base                             |
| 765-00003 | 1        | Double Battery Shelf                        |
| 710-00034 | 8        | 1/4"-20 x 3/4", Flat-head socket-head screw |
| 710-00035 | 6        | #4-40 x 5/8" Pan-head screw                 |
| 713-00001 | 6        | #4-40 x 5/8" Round Aluminum Standoff        |
| 725-00024 | 1        | 5/32" Ball End Hex Key                      |
| 700-00064 | 1        | Parallax Screwdriver                        |

## Assembly Instructions

These instructions assume that you're combining the Arlo Robot Base Kit with the Motor Mount and Wheel Kit –MP and two of the Caster Wheel Kit Rev B. Of course, you are free to use your own motor drive and caster wheel system; in that case, skip down to "Working with HDPE."

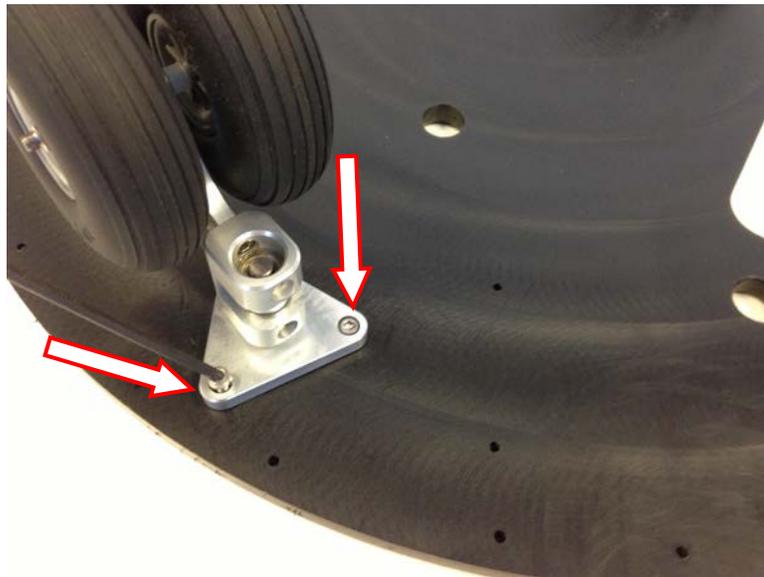
Assembly using the Motor Mount and Wheel Kit -AL (Aluminum version) is the same, unless noted otherwise.

### Step 1: Attach Caster Wheel Assemblies

Construct two Caster Wheel Kit Rev B assemblies (#28961) by following that product's guide.

The bottom of the Robot Base is the side that has the two sets of (3) caster mount holes showing. These are "blind" holes, because they do not go all the way through the base material. This results in a cleaner look on the topside of the deck and eliminates the need for nuts and washers on top surface of the platform.

Position each pre-assembled Caster Wheel Kit Rev. B's to a set of (3) blind holes as shown below.



Insert a #6 x 3/8", Socket-head cap screw included with the Caster Wheel Kit Rev B into each mounting hole in the caster's mounting plate. Tighten using the included ball end hex key for this operation.

Retain the hex wrench for future use—it works well if you decide to install PING))) Ultrasonic Distance Sensor Protector Stands, Sharp IR sensor stands, or Dual PING)))/IR stands around the perimeter of the Base using the pre-drilled holes.

## Step 2: Attach Motor Mount and Wheel Assemblies

Construct two Motor Mount and Wheel Kit assemblies (–AL #28962 or –MP #28963) by following that product's guide.

Attach each assembly to the underside of the Arlo Robot Base as shown, using (2) ¼-20 x ¾" flat-head screws for each. Tighten with the 5/32" hex key.



## About the Battery Tray

The Double Battery Tray serves multiple purposes:

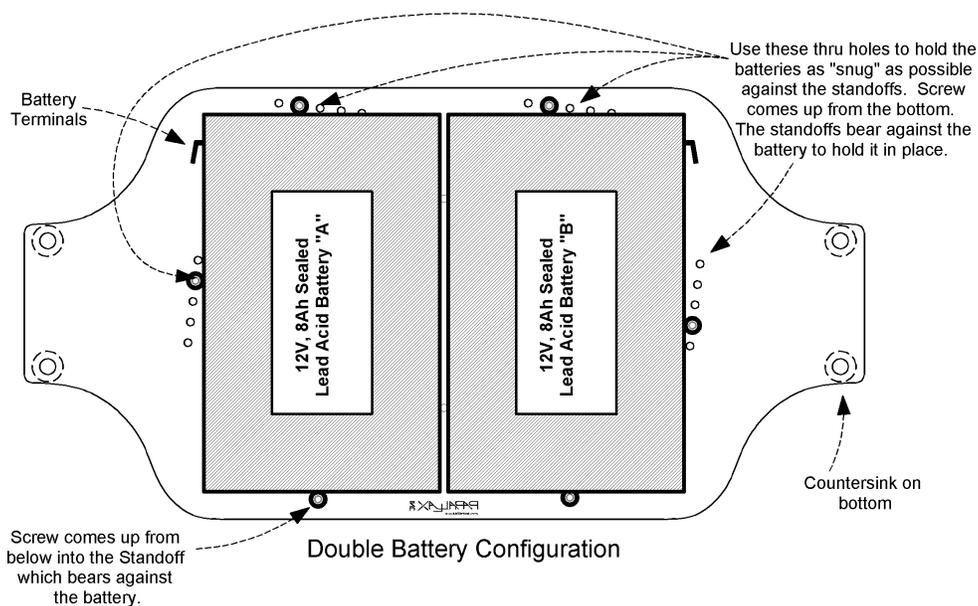
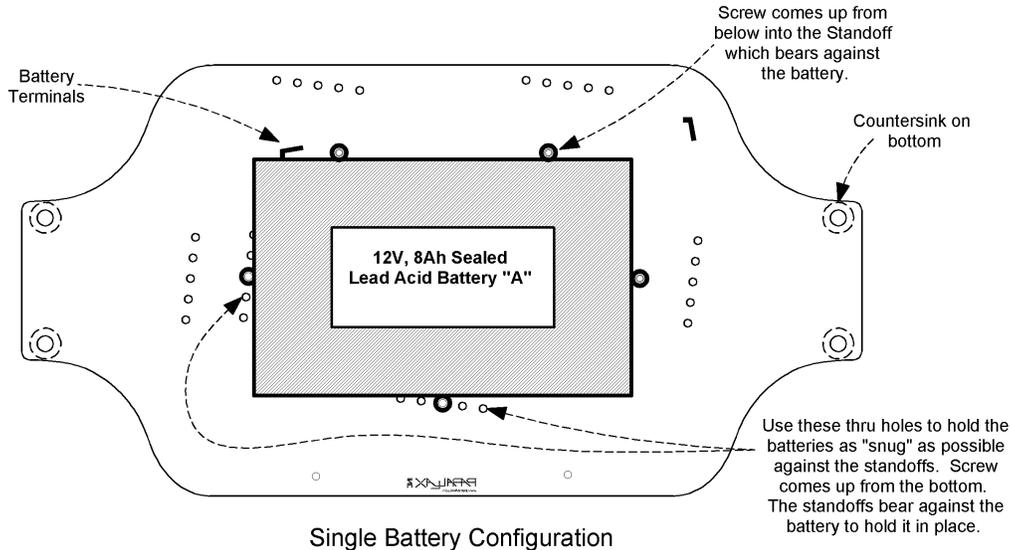
1. It holds either one or two SLA batteries (or battery systems of your own design)
2. It adds necessary rigidity to the structure of the Arlo Robot Base platform.
3. With batteries or other ballast installed, it provides a very low—and centered—center of gravity. This results in a very stable mobile robotic system, even if you make it taller by adding an Arlo Top Deck (#28965) or your own custom additions.

So, even if you may not want to mount batteries on the tray, that doesn't mean you should leave the tray off of the platform. The tray with batteries or some other form of ballast provides significantly more strength and stability to the entire system.

### Step 3: Install the Battery Tray Standoffs

The Battery Tray can accommodate one or two 12 V, 8 amp-hour sealed lead acid batteries depending on your power and load requirements. Batteries such as the PowerSonic #1270 or Werker #WKA12-8F2 work well.

Attach the standoffs (which act as battery retention posts) to the battery tray in the positions shown, for the desired battery configuration.



Firmly secure your batteries to the Battery Tray. Several methods can be used, including zip-ties or double-sided sticky tape. If you're using a standard 12 V, 7.5 Ah sealed lead acid (SLA) Battery, the (included) 5/8" F/F standoffs and #4-40 x 1/2" long pan-head screws can hold your battery securely as shown. The staggered hole patterns accommodate slight dimensional variances between different brands of batteries.

#### Step 4: Attach the Battery Tray to the Motor Mount Blocks

Flip the battery tray assembly over and attach it to the motor mount blocks using (4) ¼-20 x ¾" flat-head screws and the 5/32" hex key.

These screws should be snug because they hold your entire robot drive system together. **If you're attaching HDPE Motor Blocks, be careful not to over-tighten.**



#### Working with HDPE

- HDPE is a non-brittle form of plastic that is FDA approved for direct food contact (not that it matters unless you're going to place raw food on your robot).
- HDPE does not absorb liquids and is highly resistant to most cleaning agents. It is also resistant to breakdown from UV light exposure.
- Many common woodworking tools can be used to drill, cut, carve, and tap (cut screw threads) HDPE. Jigsaws, circular saws, standard drill bits, routers and router bits, all provide various ways to customize your Robot Base. Unlike wood products, HDPE has no grain. Therefore, when you cut, drill, plane, or chisel HDPE, it will not split or splinter.
- Although you can tap HDPE, in most cases this is not necessary. Simply drill a thru-hole that is slightly under-sized compared to the screw itself. As you insert the screw into the hole and twist it in, the screw will cut its own threads. Go slow so that you don't strip out the threads.
- You'll notice that the HDPE itself can act like a lock-nut. That is, when you stop turning the screw, the HDPE will tend to bind and hold the screw tight.
- If you do over-tighten and strip out the threads, remove the screw. Then, using a small straight-blade screwdriver and hammer, simply tap around the perimeter of the hole to "cave in" the material a bit. Now re-insert the screw, and it will tighten right up as it cuts a new set of threads.

## Product Compatibility Notice

The Arlo Robot Base Kit #28960 replaces our original Robot Base Kit #28977.

### **This Arlo Robot Base Kit is compatible with:**

- #28962 - Motor Mount and Wheel Kit –AL (Aluminum version)
- #28963 – Motor Mount and Wheel Kit –2MP (Molded Plastic version)
- #28961 - Caster Wheel Kit Rev B
- #28965 – Arlo Robot Upper Deck

### **This Arlo Robot Base Kit is NOT compatible with:**

- #27971 - Motor Mount and Wheel Kit (which has been discontinued)
- #28971 – Caster Wheel Kit, original version (which has been discontinued)

## Resources and Downloads

Check for the latest version of this document and additional resources on the Arlo Robot Base Kit product page. Go to [www.parallax.com](http://www.parallax.com) and search “28960”.