

# Bat-Hat

## Extension cable instructions

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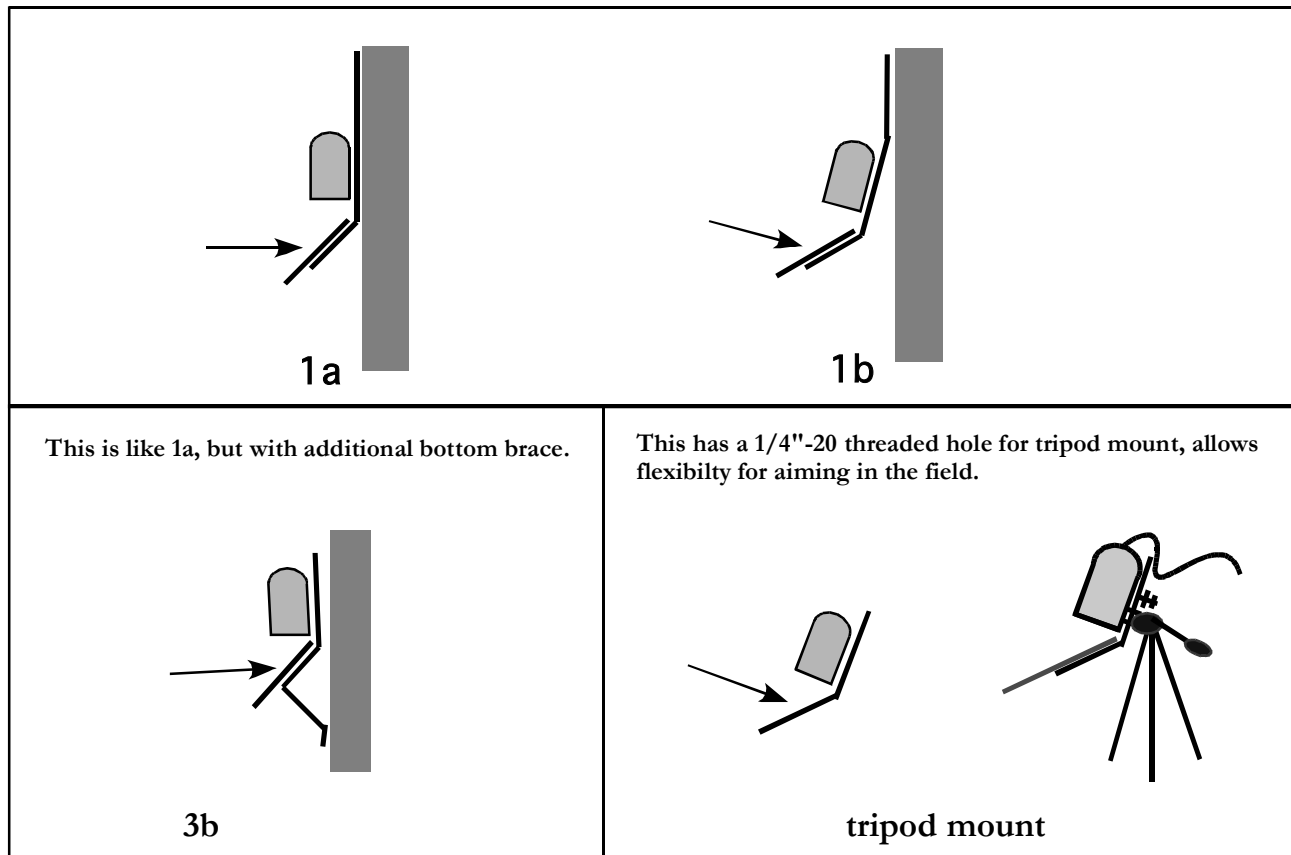
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## Bat-hat parts and installation

The bat-hat is a protective shroud, mounting bracket and reflector for the Anabat microphone. A preamp is encased into the shroud so that it can be used on long cables, even with the standard Anabat microphone. We have provided cables up to 80 meters in length for use on towers and trees. The opposite end of the cable is fitted with a DIN-8 male connector that plugs into the Anabat microphone input. There is also a PG11 gland nut on the Anabat end, that allows the cable to pass through the wall of an enclosure and to be sealed from water ingress.

The bat-hat mounting bracket is made from 3/16" aluminum bar stock and allows mounting the microphone on a pole or structure. The reflector is oriented at 45° to the microphone opening. In case "1a" and "3b" shown in the diagram below the shroud is vertical, the reflector is at 45°, and the main sound acceptance is from "straight out", horizontally. In case "1b", the bracket is bent out at 15°. In this case the main sound acceptance is from the higher angle, although in all cases the acceptance angle is wide. The reflector is below the horizontal so that it will shed rain and snow.



## Bat-hat assembly.

- Assemble the threaded coupling part of the shroud onto the bracket using two #8 lock washers and two #8-32 nuts.

- Assemble the reflector onto the bracket using two 5/8" by #8-32 flathead screws and nuts.

- You can use any of the Anabat microphones with this system. Standard, Hi-mic, or Lo-mic. There is a preamp cable driver built into the cap. If you need to order a mic, the standard mic is the best choice, unless you need to monitor the lowest frequency Eumops and Euderma calls, in which case the Lo-mic is the best choice.

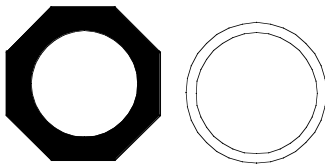
- Plug the microphone securely into the socket. If desired, use silicone grease to protect the contacts and to smooth the connection. However, be careful that the microphone cannot shake loose if it will be mounted on a base that will shake or vibrate.

- Apply teflon tape or grease to the threads on the sleeve (important!) and then screw the cap onto the sleeve hand tight. Without tape or grease, the shroud assembly will be difficult to disassemble. **IMPORTANT!**

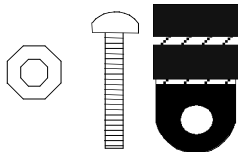
- Precautions. You may paint the hat and bracket with a neutral color to hide it and protect the PVC from UV in sunlight.

- Ants and wasps may find the shroud to be the ideal nesting place. You may want to improvise netting or screen to discourage them. Birds may want to perch on the bracket. Use an point upward to discourage them. Avoid locations where water can bounce back into the shroud. A downward angle for the bracket allows water and snow to slip off the reflector.

- Mount the bracket using compression hose clamps of an appropriate size, or other means suitable for the situation. A cable clamp and tie wraps should be used liberally to secure the cable, to keep the weight off the hat, to prevent the cable from whipping in the wind, and to prevent distortion of the bracket from a tug from below.

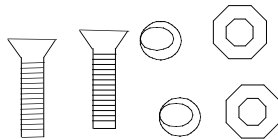


**nut and sealing washer for PG11 cord grip**



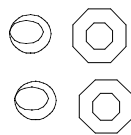
**extra strain relief for bat-hat cable**

- (1) #8 SS nut
- (1) #8 x 5/8" SS pan head machine screw
- (1) strain relief loop



**hardware to attach reflector to bracket.**

- (2) #8 x 5/8" flat head SS machine screws
- (2) #8 SS lockwasher
- (2) #8 SS nut

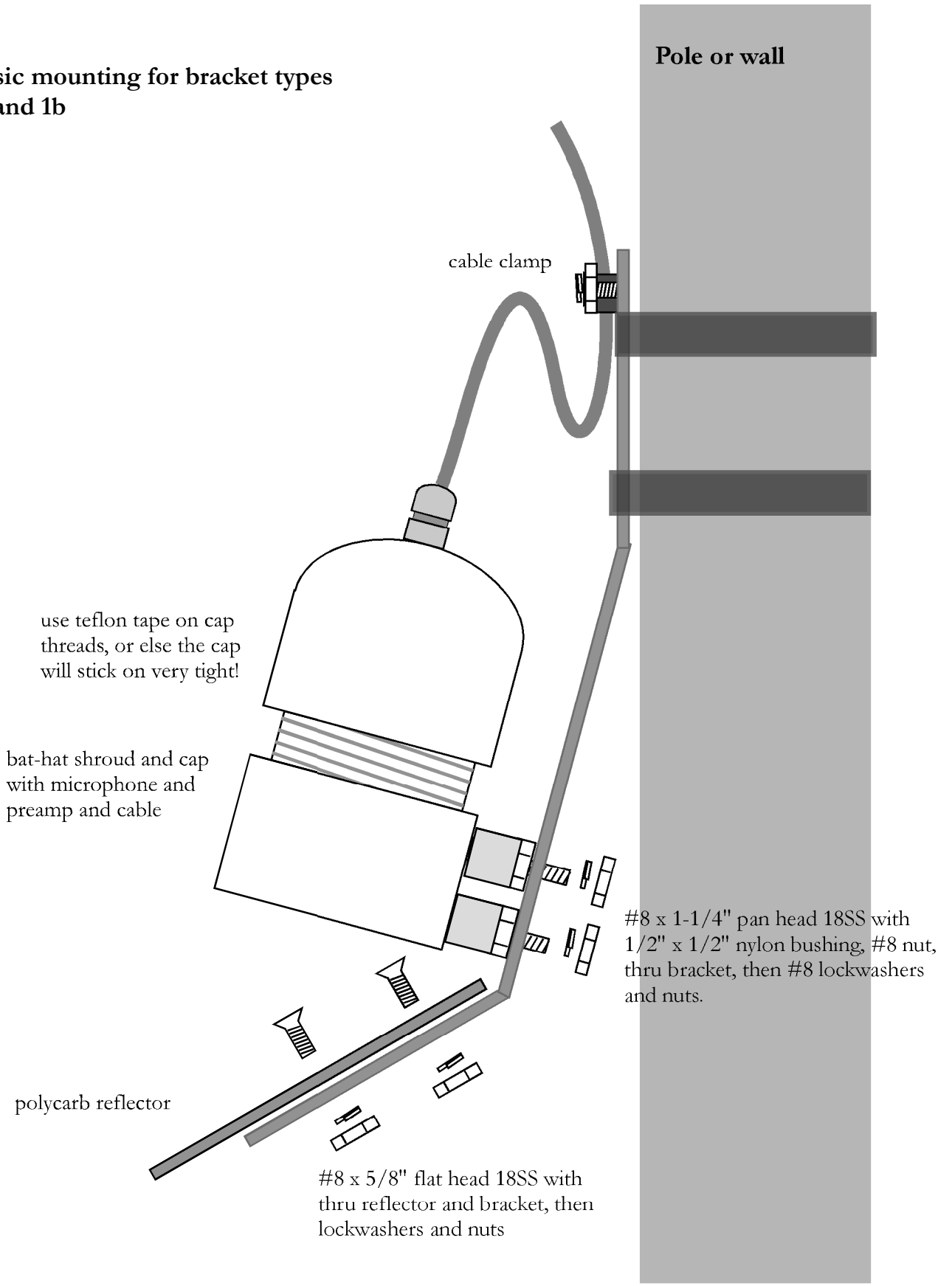


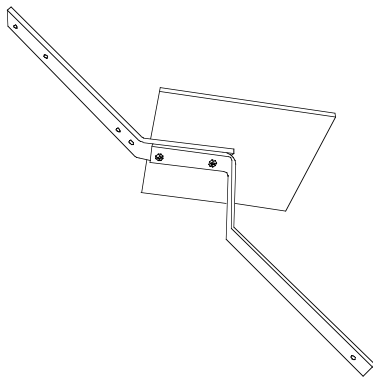
**hardware to fasten shroud to bracket.**

- (2) #8 SS lock washer
  - (2) #8 SS nut
- note: bracket has #8x1.25" SS pan-head machine screw, .5" x.5" bushing, & #8 SS nut.**



# Basic mounting for bracket types 1a and 1b





**Bracket style 3b with extra bottom brace.**

cable clamp  
Be sure the cable is well-secured along its entire length

Stainless hose clamps around pole, you supply depending on type of mounting. Rubber or similar pad under the bracket can isolate the mic from vibration in the pole and connection.

bat-hat shroud & cap with microphone, preamp & cable

use teflon tape on cap threads, or else the cap will stick on very tight! The cap can be removed in order to install the mic.

#8 x 1-1/4" pan head 18SS with 1/2" x 1/2" nylon bushing, #8 nut, thru bracket, then #8 lockwashers and nuts.

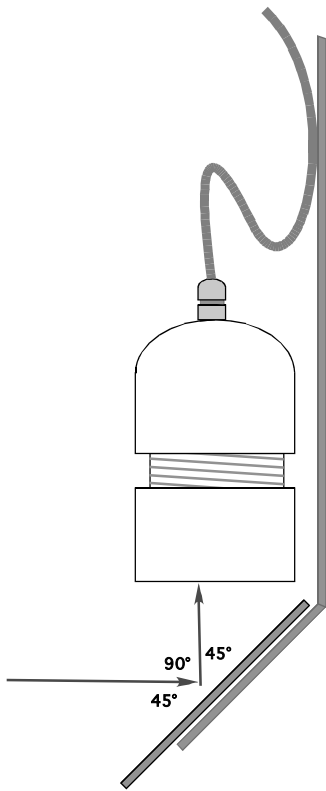
#8 x 3/4" flat head 18SS with thru reflector and bracket, and through extra bottom brace if used, then lockwashers and nuts.

Use thread lock compound on screws when vibration will be a concern.

polycarb reflector  
6" x 6" x 3/16"

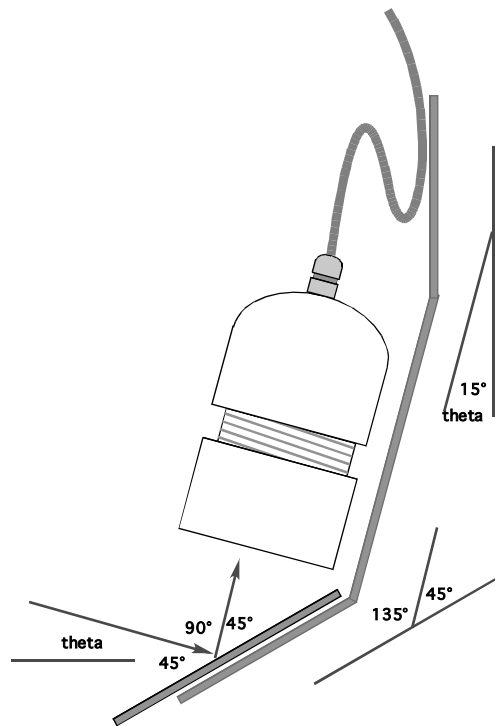
Optional bottom brace with #8 x 3/8" pan head, lockwasher & nut. Clamp at bottom.





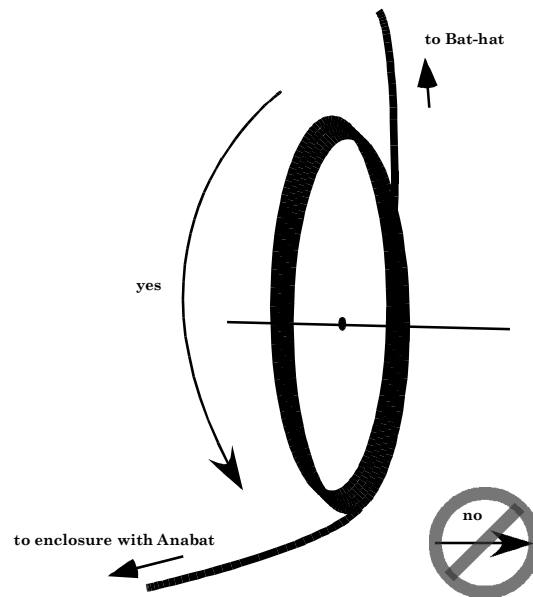
The reflector is mounted at a 45 degree angle with respect to the microphone axis. The major sound entry direction is thus at a 90 degrees with respect to the microphone axis. When the axis of the microphone is vertical, the major axis is “straight out” along the horizontal.

When the microphone is positioned at a certain angle off the vertical, the major sound entry is the same angle above the horizontal. We can provide the bracket either straight, or with the second bend, for situations where you want to place the microphone well below the position of expected bat activity. We recommend that the reflector keep a slope of at least 15 degrees below the horizontal, so that it will shed water.



### Sensitivity issues:

If you can set the Anabat sensitivity control on 8 when the mic is plugged directly into the Anabat, you may have to fall back to a setting of 7 or 7.5 when using the same setup with a long cable. The signal to noise ratio is greatly effected by local conditions. Look for local sources of ultrasound, motors, defective florescent lighting, nearby radio towers and other sources of radio interference. It is important that there be a good ground connection inside the Anabat between DIN8 connector and the interior shielding. There are small modifications that can be made in the older Anabats (pre 2007) to improve the noise performance. Contact EME Systems or Titley Electronics for details.



### Unrolling the cable:

In order to avoid tangling long cables, please unroll it in a circular motion around the central axis, not by pulling the cable off from the side. It may work best to lay it out flat on a surface before feeding it up a tower. Cable mounted on a tower should be well secured to keep it from banging in the wind. If the cable will be deployed near the ground, run it through woven or split loom tubing or conduit in order to protect it from rodent bites and hazards.





### Weather protection:

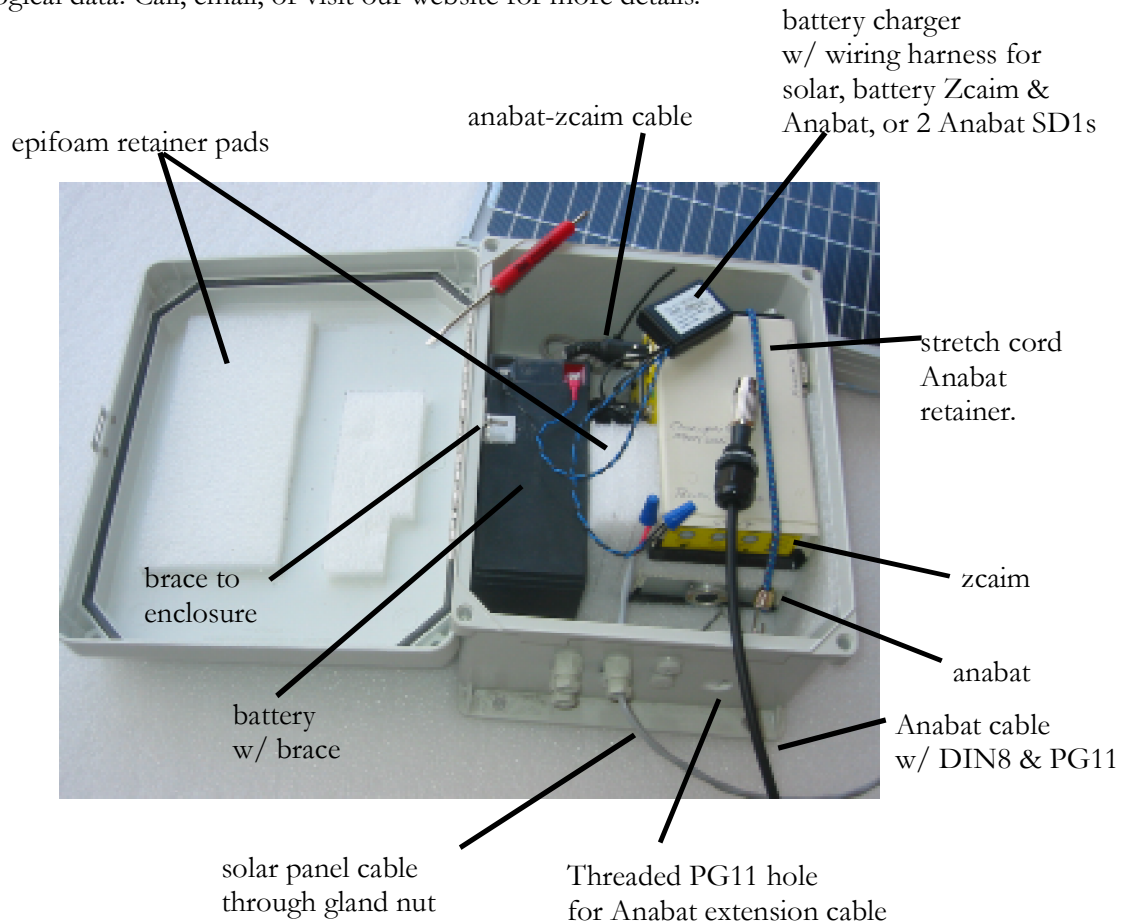
Below, the photo shows how the male plug end of the cable comes to a weather resistant enclosure. This is the arrangement we have come up with, but the idea is the same no matter what enclosure you use. The cable passes through a hole in the enclosure, and the DIN8 connector plugs into the Anabat. The hole in the enclosure is sealed with a PG-11 gland nut that is pre-mounted on the cable behind the DIN8. The PG-11 can be threaded into the enclosure, or it can be held with a nut (provided with each bat-hat). The gland nut is tightened on the cable to complete the seal. A sealing washer goes between the PG11 and the enclosure on the outside.

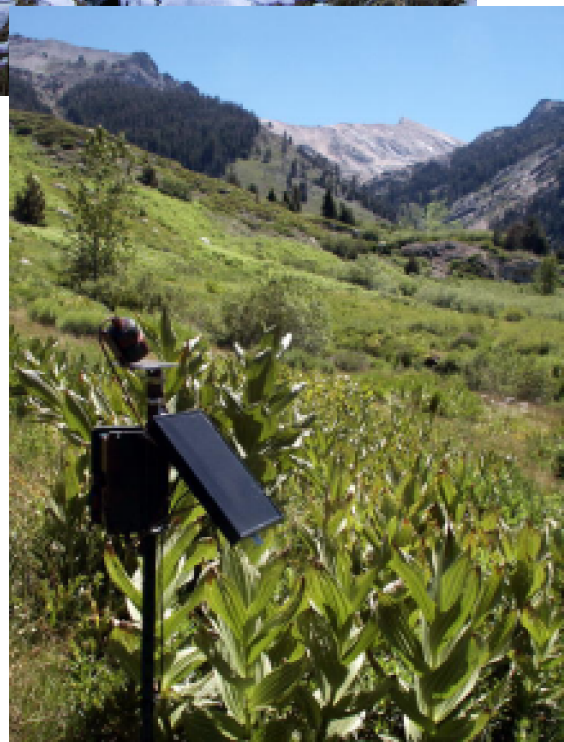
### Power management:

Also shown in the photo below is a 12 volt, 7 amp-hour battery (B1207) and solar battery charger (CG1129BH) with a wiring harness for the system. We can supply the enclosure (EFG1008BH) as shown prepared for use with the Anabat/zcaim combination or with two Anabat SD1/SD2's in the one enclosure. With a solar panel (10 watt or 5 watt, AE1210 or AE1205), the system can operate in a remote location for an entire season.

### Data Logging

EME Systems sells the OWL2pe and OWL3pro data logger, to fit in the same enclosure for recording meteorological data. Call, email, or visit our website for more details.



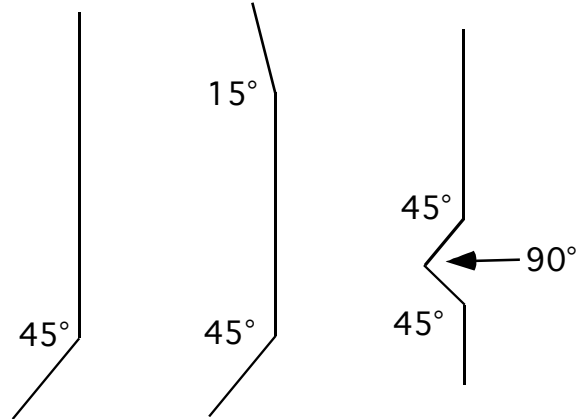




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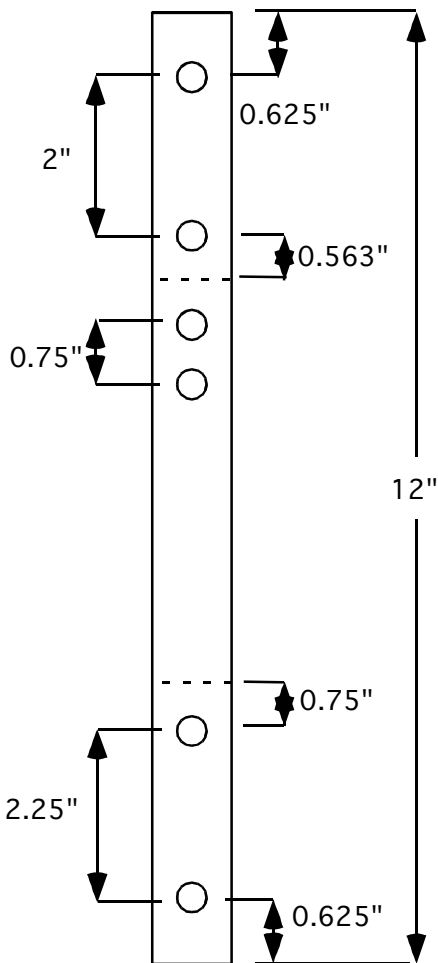
DIAGRAM AND DIMENSIONS  
FOR BAT-HAT BRACKETS  
REV.1 : 2013.09.04

STYLES: 1A, 1B, 3B

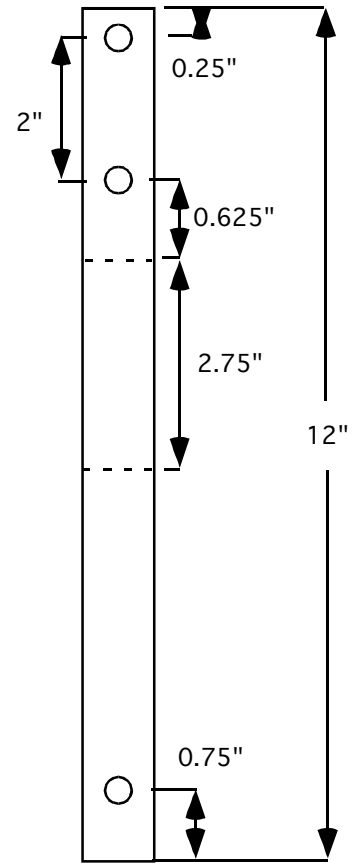
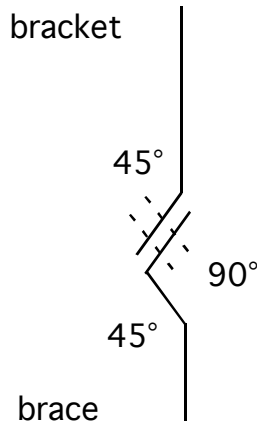


Bracket Type	1a	1b	3b
Weight (lbs.)	0.2 lbs		0.35 lbs

Aluminum-width 3/16"  
weight: 0.2 lbs



Brace for  
bracket type 3b  
(Aluminum-width 1/8")  
(weight 0.15 lbs)

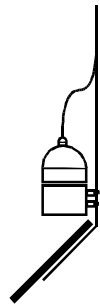




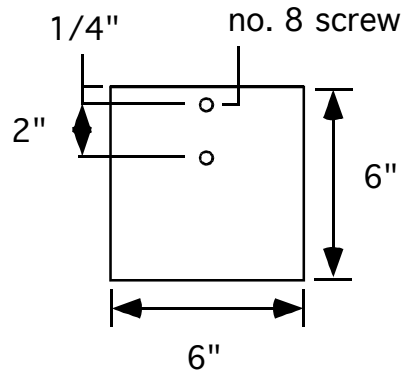
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**DIAGRAM AND DIMENSIONS  
FOR BAT-HAT CAP AND REFLECTOR  
REV.1 : 2013.09.04**

Full Assembly (0.95 lbs)



Reflector (Polycarbonate)  
(0.25 lbs)



Bat-Hat Coupler (PVC)

0.20 lbs

Bat-Hat Cap (PVC)

0.25 lbs

