

AT2

Engine Runtime Installation and Mounting Guide



Step 1: Selecting a Mounting Location

To ensure best performance and to maximize service life:

- Select a horizontal mounting position (lying flat, facing skyward) that provides the best view of the sky.
- Select a mounting location that is clean and isolates the AT2, ERT cable, and baseplate from damage.
- If the asset will accumulate prolonged snow buildups on the AT2 device, the AT2 can be mounted on a flat vertical surface. Some minor degradation of messaging reliability may occur in vertical mounts. If the device must be mounted vertically, point the device with the connector and cable connection body pointed downward towards the ground.
- Recommended mounting area size is 11.0" L x 4.0" W (280mm L x 102mm W).
- DO NOT PAINT OR COVER THE AT2, otherwise product performance and service life will be impacted.
- The AT2 solar panel should be kept clean of mud and material buildups, otherwise product performance and service life will be impacted.

Step 2: Assemble and Mount the AT2

The ERT kit consists of the following parts:

- Qty 1 - AT2 Tracking Device
- Qty 1 - AT2 ERT Input Cable
- Qty 1 - AT2 ERT Mounting Baseplate
- Qty 4 ea - #6 AT2 Mounting Screws and Washers
- Qty 6 - Terminal Crimp Butt Splices (2 required)
- Qty 1 - 15" Cable Tie

Tools Required:

- Phillips Screwdriver (Size P0 or P1)
- 3/16" Flat-blade Screwdriver
- 7/64" Hex (Allen) Key



1. Remove the AT2 Endcap with a P0 or P1 size Phillips Screwdriver. The endcap can be kept for future maintenance or simply discarded.
2. Insert the AT2 ERT Input Cable into the connection on the end of the AT2. It can only be inserted in one orientation.
3. By hand, thread in the two screw posts on the cable body into the AT2 connection end and secure with a 3/16" flat blade screwdriver. Hand tight is acceptable to seat the connection. Do not overtighten or damage to the connection may occur.
4. Place the AT2 Tracking Device with cable installed onto the AT2 ERT Mounting Baseplate, aligning the four mounting ears with the four threaded inserts in the mounting baseplate. Ensure the cable connection is aligned as shown on the mounting baseplate.
5. Insert a #6 screw into a #6 washer and place through each mounting ear on the AT2 and into the mounting baseplate threaded inserts. Do not tighten the screws fully into the baseplate until all screws are loosely started in each of the threaded inserts
6. Fully seat the AT2 and tighten the four #6 screws in the baseplate. Do not over-tighten the mounting screws or damage to the mounting ear or AT2 body may occur. Do not exceed 10 in.lb (1.2 N.m) of torque.
7. Pass the cable tie around the molded cable end (between the molded body and the cable screw posts) through the holes provided in the mounting baseplate and secure the cable molded body to the mounting baseplate. To keep a low profile, position the cable tie head underneath. Trim any excess cable tie material flush with the cable tie head.
8. Place the ERT assembly onto its mounting location and secure the baseplate in place with four 1/4" or 6mm mounting screws (Socket Head, Hex Head, or Self Tapping) that are appropriate for the mounting surface material and thickness. Be sure to clean out all drill shavings.

Step 3: Connect the Engine Runtime (ERT) Cable to the Asset Electrical Ignition Source (Engine Ignition or Electrical DC "Engine Running" Signal)

In order to measure engine runtime, the AT2 device must be electrically connected to an ignition "on" source on the asset that indicates the engine is running.

These sources may include the following options:

- a. Engine "Hobbs" meter signal
- b. Engine "Running" light
- c. Engine ignition switch
- d. Engine fuel pump signal (assuming it mirrors engine running)

NOTE: Connecting to the asset engine alternator as an ignition source is not recommended due to voltage spikes, surges, and noisy voltages from the alternator.

The following AT2 ERT Input Cable wire colors are to be used:

-  **White Wire: ERT 12V or 24V System Voltage Input**
-  **Dark Blue Wire: ERT Ground**

AT2 ERT Cable Connection Process:

1. Route the AT2 cable through any asset bulkheads or walls to reach the asset interior and ignition connections. Sealing the panel passthrough with a cable gland or silicone is recommended
2. Identify an ignition source on the asset that most accurately represents the engine running to ensure an accurate engine runtime is measured.

3. Connect the Dark Blue wire of the AT2 cable to a solid asset ground point. A good ground is critical to ERT measurement. A crimped ring terminal connection to a ground stud or bolt is preferred.
4. Connect the White wire of the AT2 cable to the chosen ignition source. This can be done with a butt-splice, Spade, or Ring crimp terminal to properly tap into the ignition source.

All other AT2 wires can be secured out of the way with a zip-tie to prevent them from shorting or other false connections.

Step 4: Record the Asset and AT2 Serial Numbers

- a. Record the AT2 serial number.
- b. Record the asset name and serial number.
- c. Enter the asset information into the Geoforce Track and Trace software application and assign the AT2 serial number.

Contact your Geoforce account service representative if you require assistance.

Step 5: Initializing the AT2

To begin service, remove the black rubber magnet pull tab while outdoors with a good sky view.

WARNING: IF YOU DO NOT REMOVE THE BLACK MAGNET PULL TAB THE AT2 WILL NOT WORK.



Product Notices and Warnings

Installation Notices

1. **WARNING:** This product assembly is NOT certified for use in Hazardous Locations including all Zone and Class/Division classified areas. Operating this product assembly within known classified hazardous areas is at the user's risk.
2. Line power is not currently approved for the AT2. Connecting line power to the AT2 is at customer risk only and will void all warranties.
3. Geoforce highly recommends using mounting fasteners made of a material such as stainless steel that resists galvanic corrosion and environmental weathering. This is especially important for marine applications.
4. Connect the device cable wiring to the asset by using best practices for the electrical connections being used to ensure a reliable connection and ERT measurement.
5. Geoforce is not liable for any asset, engine, or pump damage resulting from an improperly chosen or installed ignition sources.

Operational Notices

1. Damage to the AT2 and its accessories caused by voltage spikes, surges, load dumps, or excessive currents are not covered under the product warranty.
2. Keep the clear plastic above the solar panel on the AT2 device clean and free of soil, paint, or debris to maximize battery charging capability and product life
3. Usage of the AT2 above 60°C may cause RF signal degradation and decreased battery longevity.
4. If the asset is going to be stored indoors for extended periods, shut down the AT2 by installing the magnetic switch (black pull tab) to prevent draining the internal battery pack. Geoforce recommends retaining the AT2's magnetic switch pull tab (if removed) for this purpose.
5. Solar panels produce the most electricity when they are facing the sun. Shading and weather conditions may negatively affect the charging of the batteries from the solar panels.
6. A fully charged AT2 device may remain operational for up to five months with a clear view of the sky in the absence of sunlight when transmitting twice per day.
7. Replace the AT2 if the clear plastic panel covering the solar panel becomes cracked.

Battery Notices

1. Avoid long-term storage (greater than 5 months) without recharging the device with sun or halogen light.
2. The internal rechargeable battery pack may be considered operational for up to 5 months with the device powered off.
3. Allowing the internal rechargeable battery pack to fully drain is detrimental to its health and longevity.
4. If the batteries of the AT2 are depleted, ensure the AT2 receives two full days (12 total hours) of adequate sunlight to fully re-charge the batteries