Solar Battery AP Installation Guide

SBAP Installation Guide
February 19, 2024
LDI-0046 REV 000

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New in this document

Revision	Date	Description
REV 000	February 19, 2024	Publication for safety certification.

1 Introduction

The Itron Solar Battery AP (SBAP) is an access point (AP) that provides a lower total cost of ownership (TCO) for gas-only and/or water-only deployments without relying on any overhead infrastructure or mounting assets. The SBAP communicates using Extended FAN Connectivity+ (EFC+) with a limited number of gas and water meters, and then backhauls the data over a cellular network. The SBAP is easily mounted on vertical or horizontal utility piping next to the utility meter set. It can also be mounted directly to a wall, either outdoors or in a meter room.

About this guide

This guide provides procedures for installing the SBAP on a horizontal pipe, vertical pipe, and wall.

2 About the SBAP

This section describes high-level functionality for the SBAP. The part numbers for the SBAP parts are described in Table 1 and Table 2.

Warning! Substitution of components may impair intrinsic safety. If you must replace any of your SBAP's components, make sure to do so only with the products and part numbers listed in the following tables.

All accessories are sold separately.

Table 1 SBAP variants

Part	Part number
SOLAR BATTERY AP, PRIMARY, EFC+, VERIZON, USA	200-900000
SOLAR BATTERY AP, EXT MESH, EFC+, VERIZON, USA	200-900001
SOLAR BATTERY AP, PRIMARY, EFC+, ATT, USA	200-900002
SOLAR BATTERY AP, EXT MESH, EFC+, ATT USA	200-900003

Table 2 Mounting kit variants

Part	Part number
SBAP, WALL MOUNT KIT	200-900901
SBAP, 3/4 IN, PIPE MOUNT KIT	200-900902
SBAP FIXED METER MOUNT KIT	200-900903
SBAP, 1 IN, PIPE MOUNT KIT	200-900904
SBAP, 1-1/4 IN, PIPE MOUNT KIT	200-900905
SBAP, 1-1/2 IN, PIPE MOUNT KIT	200-900906
SBAP, SWIVEL METER MOUNT KIT	200-900907

Battery life and behavior

A solar panel integrated into the SBAP's cover charges the SBAP's battery. The SBAP also contains a nonchargeable primary cell for backup during periods when the solar panel does not provide sufficient energy. When charging the rechargeable batteries from the non-rechargeable battery source, the circuitry only consumes enough energy from the

non-rechargeable battery source to maintain the rechargeable battery source safely above the operational minimum threshold.

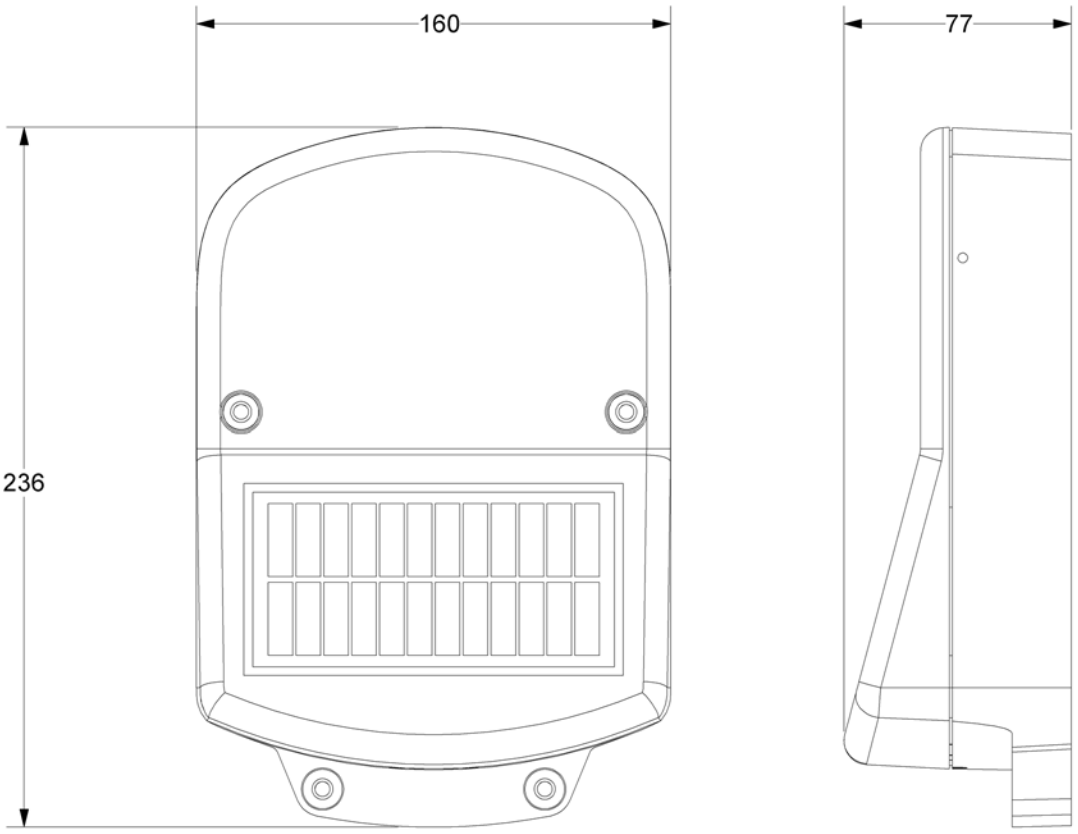
The SBAP provides the state of charge, and related performance statistics for the energy system, to the back office daily. Additionally, critical events and alarms are configured to alert the user of anomalous behavior.

Extended FAN Connectivity (EFC)

EFC+ is a firmware feature that allows SBAPs to communicate between itself and gas or water endpoints and form their own secure network without relying on direct communication with a nearby constantly powered device (CPD), like a meter or streetlight controller.

Dimensions

The SBAP is 236 millimeters (9.3 inches) high, 160 millimeters (6.3 inches) long, and 77 millimeters (3 inches) wide.



3 Installation

This section describes installation requirements and instructions for the SBAP. Make sure to review the material before starting the installation.

Before you begin

Prior to installing your SBAP, you must identify an appropriate installation location and assemble the tools required for your SBAP installation. These procedures are described in this chapter.

Installation location information

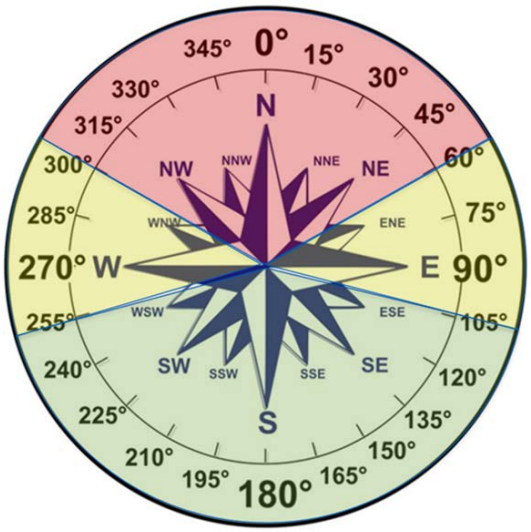
The SBAP arrives ready to be installed. Prior to installation, you must plan and prepare the installation site.

The SBAP is easily mounted on a vertical or horizontal utility piping next to the utility meter set. It can also be mounted directly to a wall, either outdoors or in a meter room. The SBAP can be mounted in outdoor environments and will operate as expected in temperature ranges between -40° C and +70° C (-40° F and 158° F). The SBAP shall always be oriented with the solar panel pointing upwards, as described later in this section.

The SBAP requires a cellular connection. Ensure that the proposed installation locations have cellular coverage. This may be accomplished by use of third-party cellular analysis tools or the built-in coverage validation accessed through Field Tools.

Determine whether there is enough sunlight throughout the calendar year to keep the SBAP charged and running. North of the equator, the south side of a house or building will provide the best sunlight for the SBAP. The best locations receive sun for many hours during the day, even in the winter months. Avoid shady locations, and be mindful of potential obstructions, such as trees or fences, that might block exposure to sunlight.

The primary factors that contribute to the energy collected by the SBAP are the direction the solar panel is facing and the amount of obstructions in the sky view from the solar panel. Ideally, the SBAP will be facing south and have a clear view of the sky. However, facing east with no obstructions is still better than facing south directly into a building. If a device must face north, it must have an unobstructed sky view all year. The image below illustrates the ideal direction an SBAP faces, where red indicates a poor direction, yellow indicates an okay direction, and green indicates the preferred direction.



The SBAP is designed for the listed installation locations:

- Pipe or pole (between 3/4 inch and 1.5 inches in diameter)
- Wall

Warning! In accordance with FCC rules, unapproved modifications or operation beyond or in conflict with these use instructions could void the user's authority to operate the equipment. Unauthorized access or modifications to the SBAP will void the warranty.

Prerequisites

Make sure that the SBAP you are installing is compatible with the carrier you intend to connect with. See Table 1 for more information.

Horizontal and vertical pipe installations

Horizontal and vertical pipe installations need the following tools:

- #2 Phillips screwdriver.
- 1/2-inch deep well socket wrench.
- Torque wrench.
- Pipe mount kit. The kit part number varies based on the size of the pipe you're mounting on. See Table 2 for ordering information.

  The mounting kits include the components listed in Table 3.

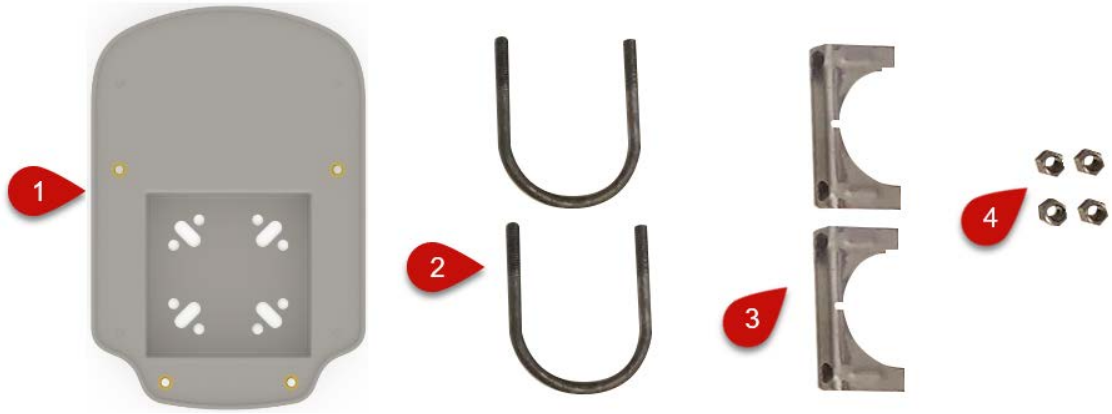


Table 3 Callout and matched component

Call out	Component
1	One mounting bracket
2	Two U-bolts
3	Two U-clamps
4	Four flange nuts

Wall mount installations

Wall mount installation requires the following tools:

- #2 Phillips screwdriver.
- Four wall anchors.
- Hammer.
- Level.
- Power drill.
- Power drill bit the appropriate size for the wall anchors.
- Marker (for marking wall anchor location).

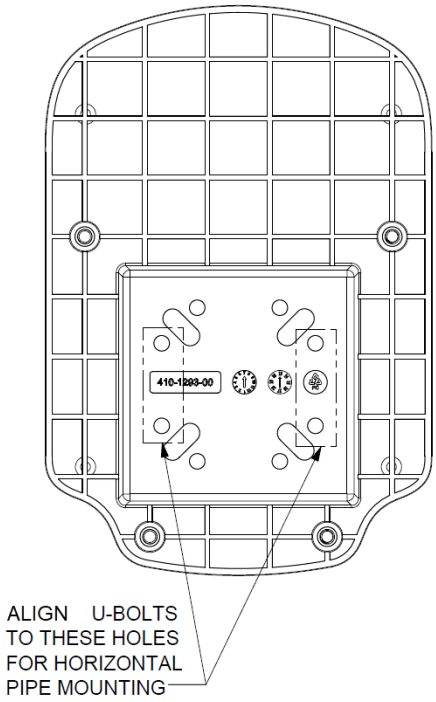
Horizontal mount

This section explains how to install the SBAP onto a horizontal pipe.

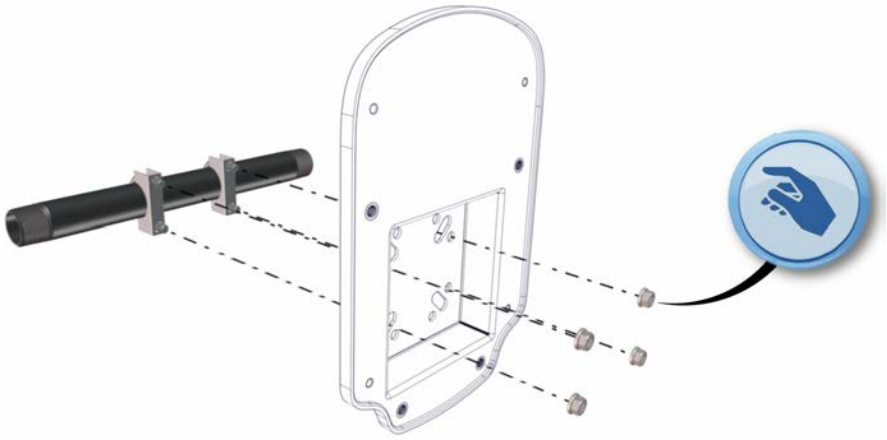
Installing the SBAP onto a horizontal pipe or pole

1. Place the U-bolt around the pipe or pole and thread the U-clamp through the threads on the U-bolt.
2. Align the mounting holes on the mounting bracket with the U-bolts.

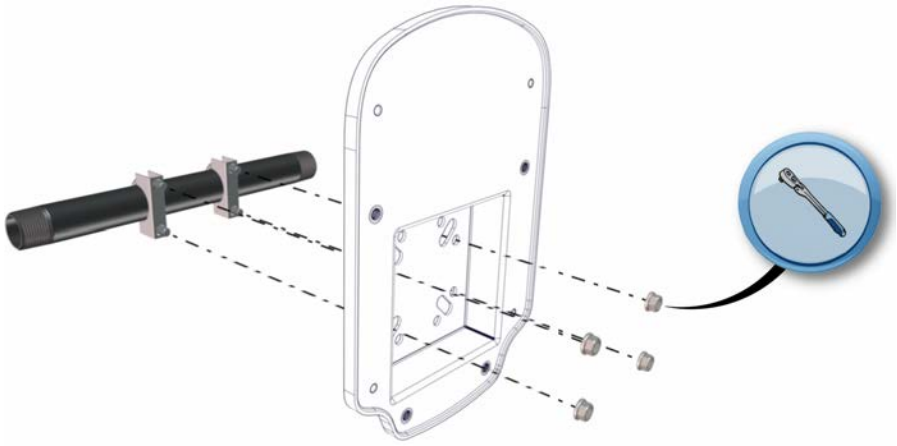
Note: The image below points out the holes used for the 0.75 pipe mounting kit. Use the slots for 1-inch pipes and larger.



3. Secure the mounting bracket to the U-bolts with the four flange nuts; finger tighten the nuts.



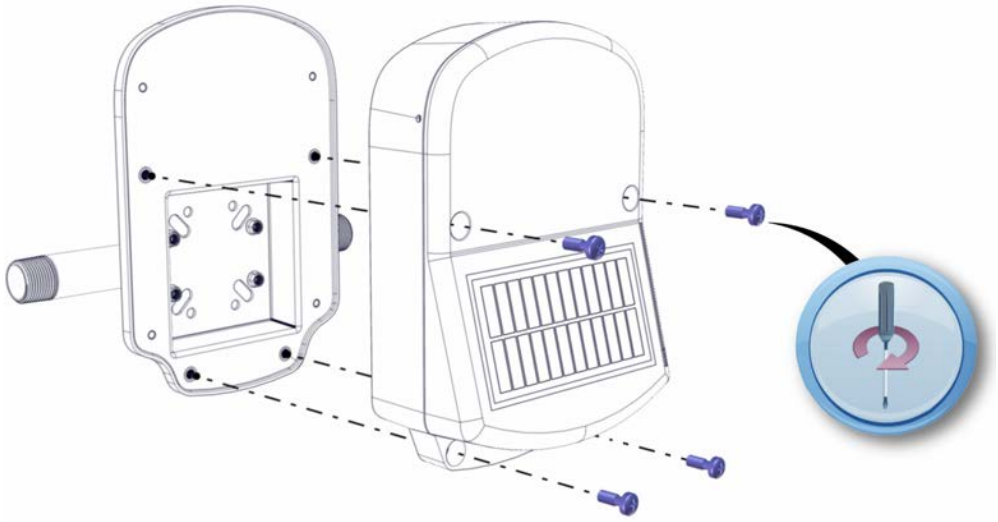
4. Torque the flange nuts to 50-60 inch-pounds.



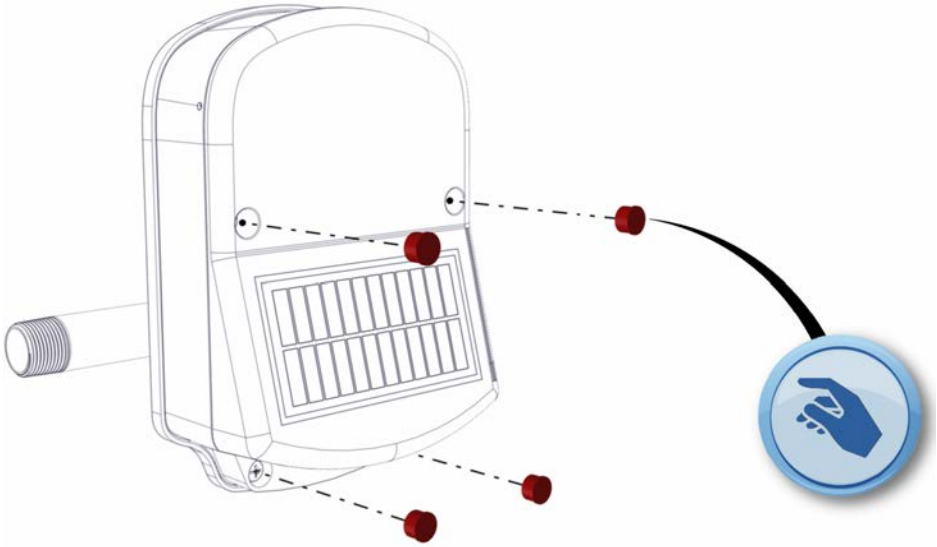
5. Align the mounting holes on the SBAP to the mounting holes on the mounting bracket.

> **Important!** Ensure that the SBAP is orientated perpendicular to the ground.

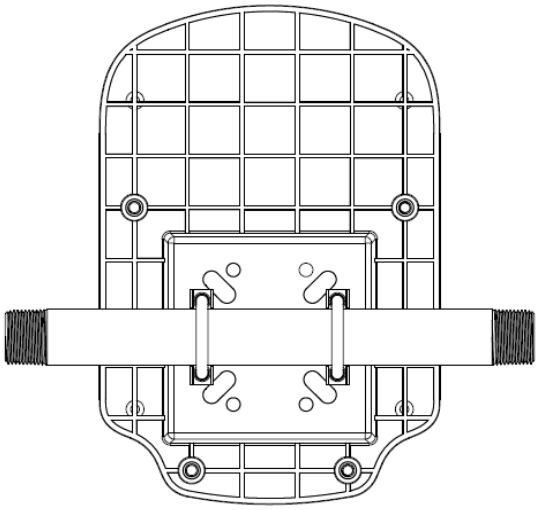
6. Secure the SBAP to the mounting bracket with the four captive screws; hand tighten the captive screws.
7. Torque the captive screws to 10-12 inch-pounds.



8. Place new tamper seals over the screws. Press tamper seals into place using an 11/32 inch nut driver or similar blunt tool.



This completes the horizontal pipe or pole assembly.



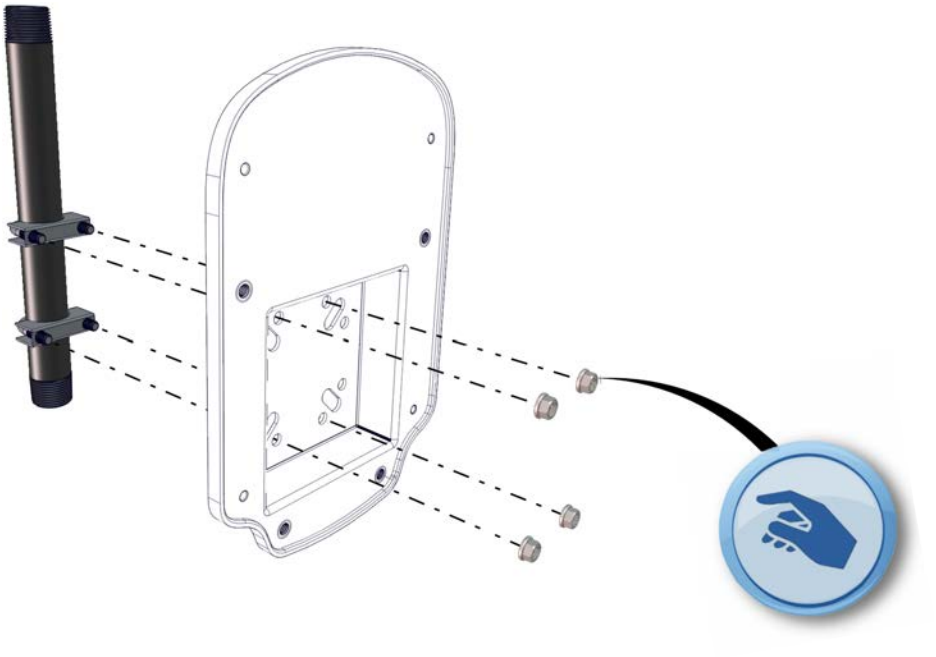
Vertical mount

This section explains how to install the SBAP onto a vertical pipe.

Installing the SBAP onto a vertical pipe or pole

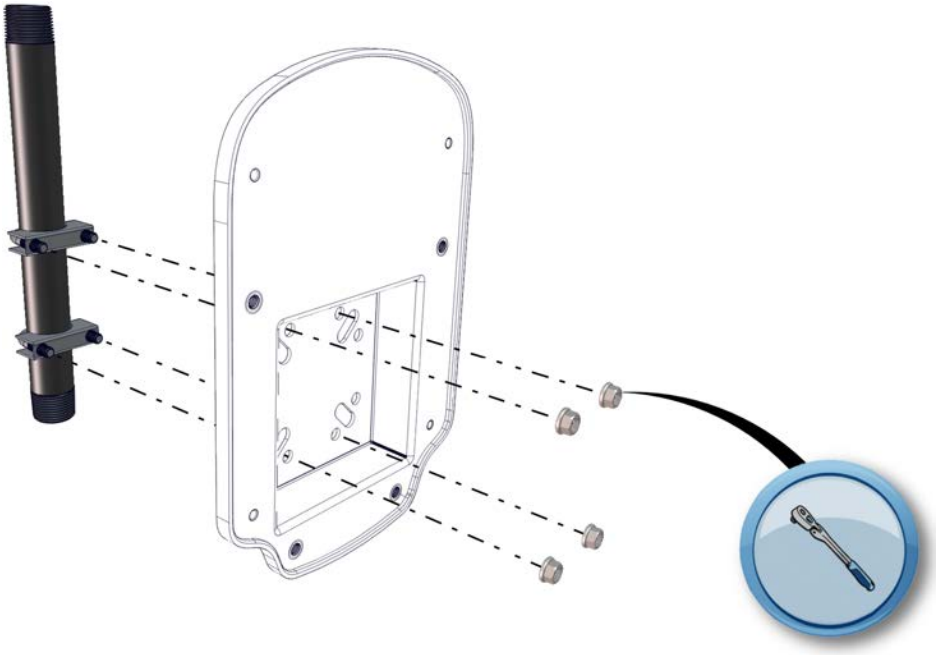
This section explains how to install the SBAP onto a vertical pipe or pole.

1. Place the U-bolt around the pipe or pole and thread the U-clamp through the threads on the U-bolt.
2. Align the mounting holes on the mounting bracket with the U-bolts.
3. Secure the mounting bracket to the U-bolts with the four flange nuts; finger tighten the nuts.



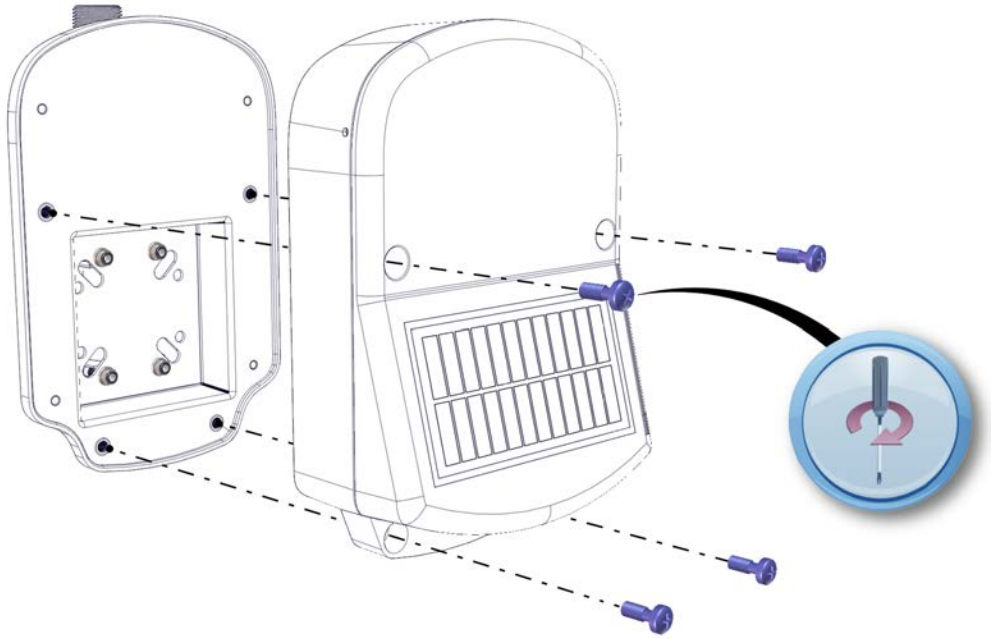
Important! Ensure that the mounting bracket remains vertically straight while securing the nuts. The SBAP must be angled in the correct direction (based on sun's trajectory).

4. Torque the flange nuts to 50-60 inch-pounds.

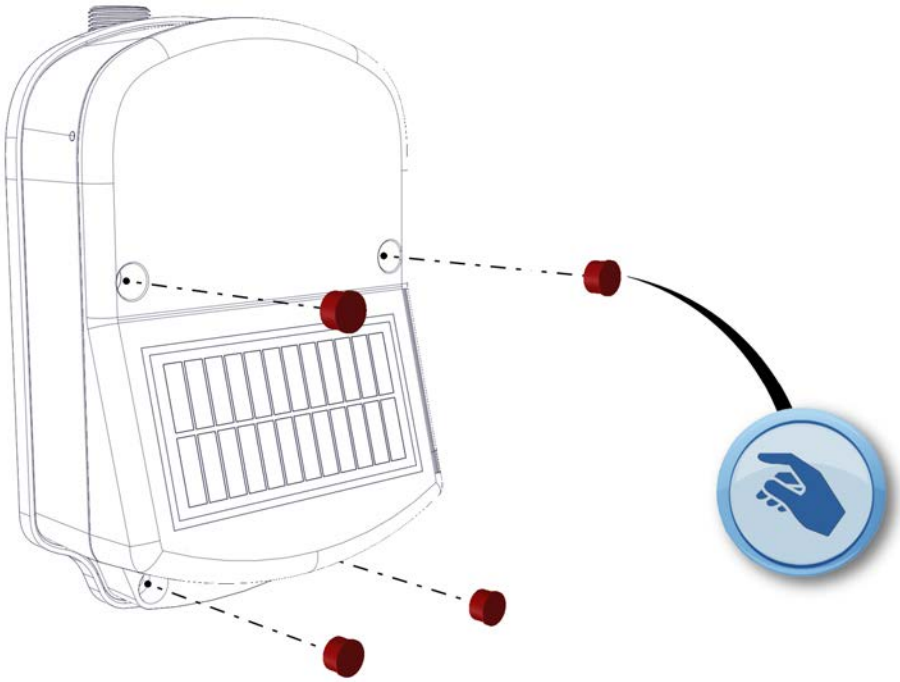


5. Align the mounting holes on the SBAP to the mounting holes on the mounting bracket.
6. Secure the SBAP to the mounting bracket with the four captive screws; hand tighten the captive screws.

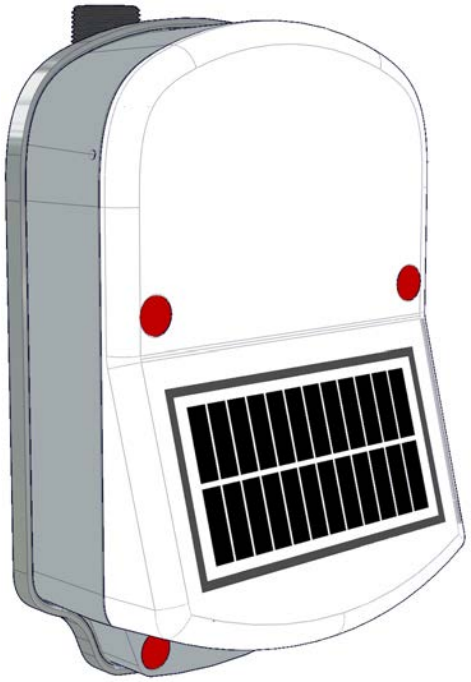
7. Torque the captive screws to 10-12 inch-pounds.

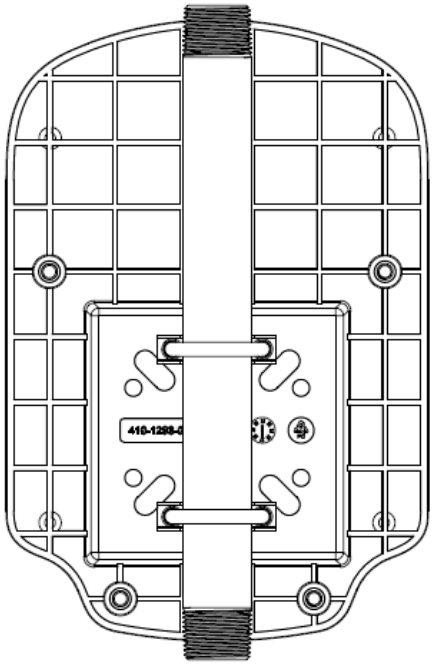


8. Place new tamper seals over the screws. Press tamper seals into place using an 11/32 inch nut driver or similar blunt tool.



This completes the vertical pipe or pole assembly.



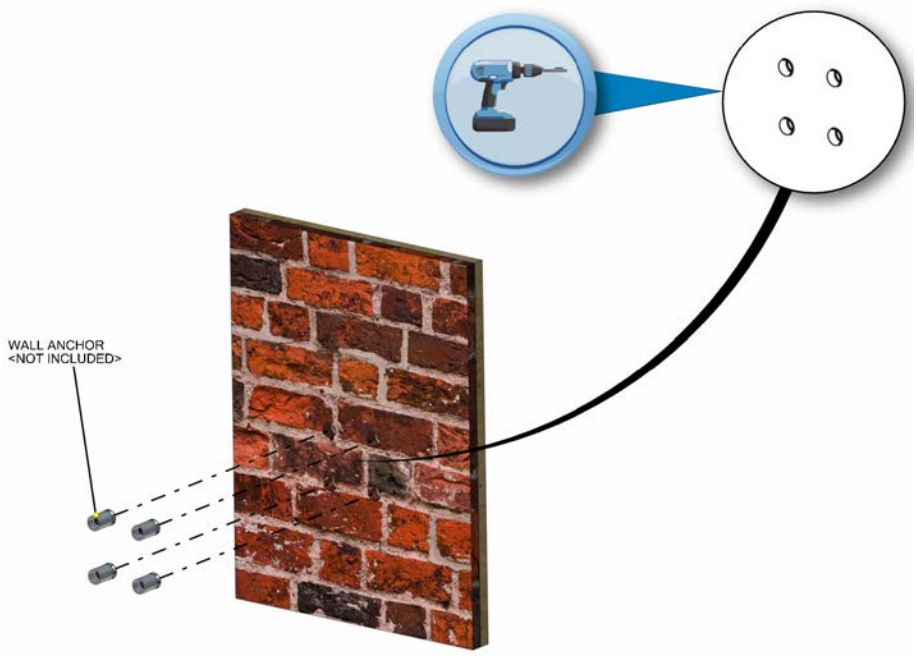


Wall mount

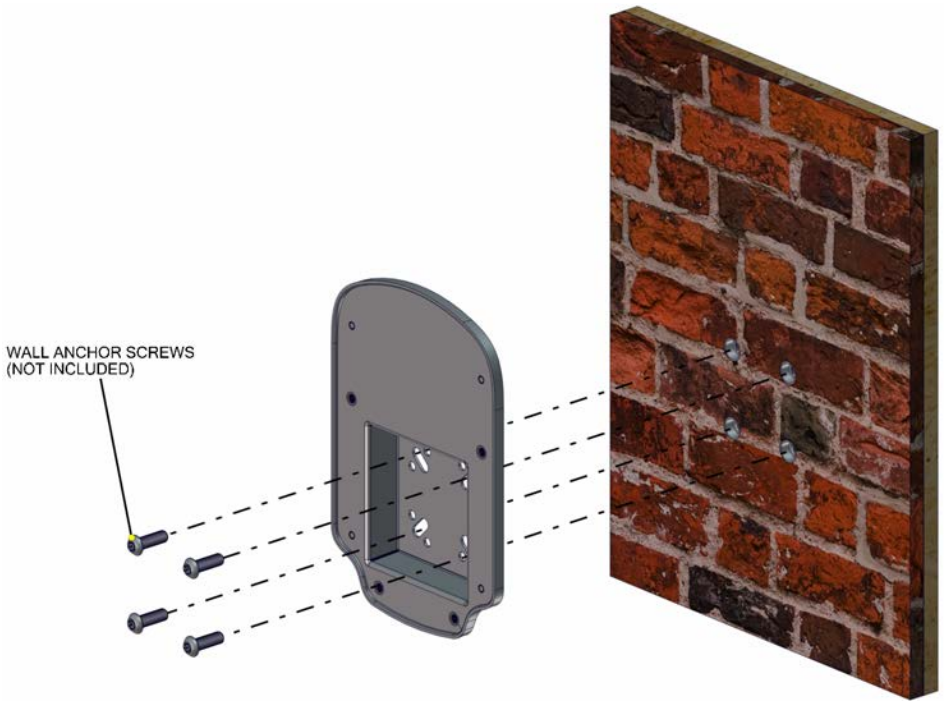
This section explains how to install the SBAP onto a wall. For required tools, see Wall mount installations on page 11

Installing the SBAP onto a wall

1. Hold the mounting bracket against the wall where the SBAP will be installed, level it, and mark the four mounting hole locations with a marker or other writing tool.
2. Set the mounting bracket aside and drill four holes according to where you marked the wall in step 1.

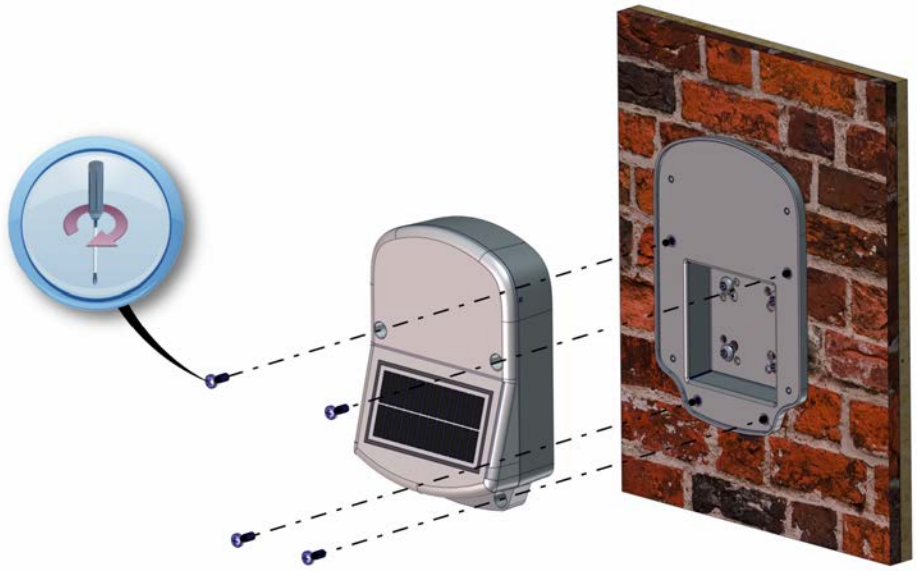


3. Install the wall anchors according to the manufacturer's instructions.
4. Align the mounting bracket with the four wall anchors.
5. Secure the mounting bracket to the wall anchors with the four screws.

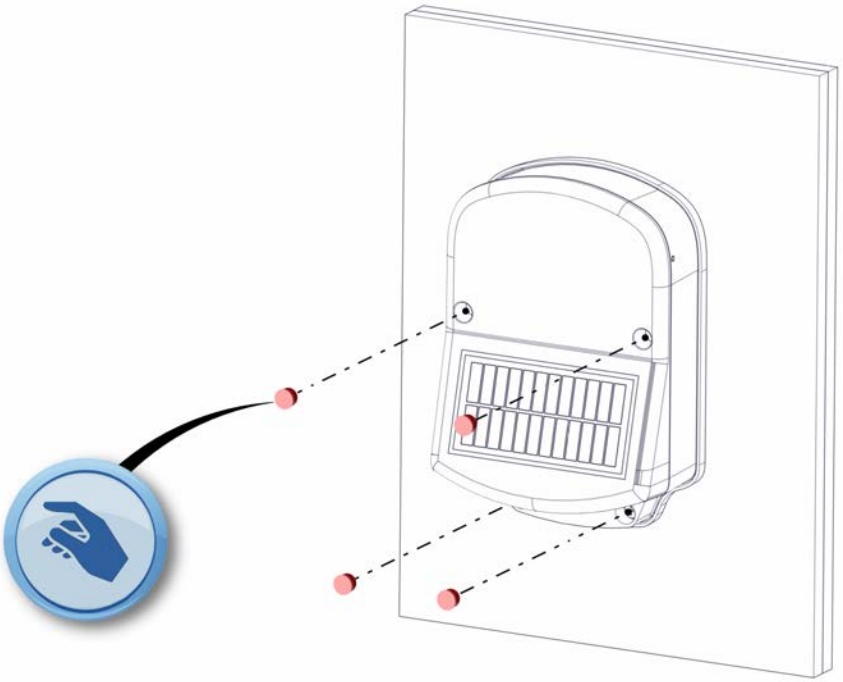


6. Hold the SBAP in place and thread a captive screw into one of the wall anchors. Repeat this action for the remaining three captive screws. Tighten the screws with a Phillips screwdriver until the SBAP is snugly attached to the backplate. Torque the captive screws

to 10-12 inch-pounds.



7. Place new tamper seals over the screws. Press tamper seals into place using an 11/32 inch nut driver or similar blunt tool.



This completes the wall mount installation.

4 Activating your SBAP

The SBAP arrives in factory ship mode. In factory ship mode, the SBAP's transmitters are turned off and the receiver remains quiet, listening for a command message. It is required then, that you use Field Tools to activate the SBAP from factory ship mode after you install the SBAP (but before you leave the install site). The SBAP must be activated prior to performing other commands (such as Check Cellular Coverage or troubleshooting).

For more information about activating the SBAP, see the *Field Tools for North American Gas and Water ERTs and Meters Help*.

5 Programming

Important! You must program the device before use.

Program the device using an approved programming device loaded with Field Tools software version 2.6 or later.

6 Events and alarms

The following events and alarms are deemed the most common for SBAP users to see.

- **Endpoint – Low Battery.** The SBAP has a non-rechargeable battery level of 10% or lower.
- **Low Solar Panel Output.** The solar panel that the SBAP relies on is not producing adequate levels of energy.
- **Low Rechargeable Battery Voltage.** Rechargeable battery voltage is below trigger threshold.
- **Cellular Registration Denied.** The SBAP could not verify registration with the cellular carrier.
- **No Cellular Network Coverage.** The SBAP could not find a cellular network.

For complete information about the tampers or events and alarms available in your SBAP, see *Advanced Metering Manager (AMM) 5.2 Events*.

7 Important safety and compliance information

This section provides important information for your safety and product compliance.

USA, FCC Part 15 spectrum compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This device must be installed to provide a separation distance of at least 20 centimeters (7.9 inches) from all persons to be compliant with regulatory RF exposure.

USA, FCC Class B-Part 15

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or TV technician for help.

Modifications and repairs

To ensure system performance, this device and antenna shall not be changed or modified without the express approval of Itron. Per FCC and ISED rules, unapproved modifications or operation beyond or in conflict with these instructions for use could void the user's authority to operate the equipment.

Canada, ISED spectrum compliance

Compliance Statement Canada	Déclaration de Conformité
This device complies with Innovation, Science and Economic Development Canada (ISED) license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, (2) this device must accept any interference, including interference that may cause undesired operation of the device. Under Innovation, Science and Economic Development Canada (ISED) regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.	Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement. Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

RF exposure (FCC/ISED)

This equipment complies with radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.	Cet équipement est conforme aux limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement do it être installé et utilisé à distance minimum de 20 cm entre le radiateur et votre corps. Cet émetteur ne doit pas être co-localisées ou opérant en conjonction avec tout autre antenne ou transmetteur.

Transportation classification

The Federal Aviation Administration prohibits operating transmitters and receivers on all commercial aircraft. The Itron device is considered an operating transmitter and receiver and cannot be shipped by air. All product returns must be shipped by ground transportation.

Lithium battery safety

Warning! Follow these procedures to avoid injury to avoid injury to yourself or others:

- The lithium battery may cause a fire or chemical burn if it is not disposed of properly.
- Do not recharge, disassemble, heat above 100° Celsius (212° Fahrenheit), crush, expose to water, or incinerate the lithium battery.
- Keep the lithium battery away from children.
- Fire, explosion, and severe burn hazards

Intrinsic safety

Warning! Substitution of components may impair intrinsic safety.

Electrostatic ignition hazard

Warning! Verify the area is not hazardous when installing, servicing, cleaning, or touching the Itron device.

Module cleaning

Warning! Clean only with a damp cloth.

Do not drop

Warning! While Itron modules are designed to withstand a drop, dropping the SBAP may damage the device and void the warranty.