Product Manual

Tripod, Tower, Mount

CM300-Series

Mounting Poles

Revision: 03/2021

RELIABLE SINCE 1974 MONITORING

CAMPBELL SCIENTIFIC

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CM300-Series Mounting Poles

1. Overview

The CM300-series mounting poles provide a stainless steel 1.5 IPS vertical pole for mounting sensors, enclosures, or other instrumentation. Pole length is 58 cm (23 in), 119 cm (47 in), or 142 cm (56 in) for the CM300, CM305, and CM310 models, respectively.

Mounting poles are placed directly into a concrete foundation, attached to a concrete foundation with the Pedestal J-Bolt Kit option, mounted to a vertical post with the CM345, or are self-supporting with the Pedestal Leg options (FIGURES 1-1, 3-1, 3-4, 3-6, 3-9). A vinyl cap prevents precipitation from entering through the top of the pole.

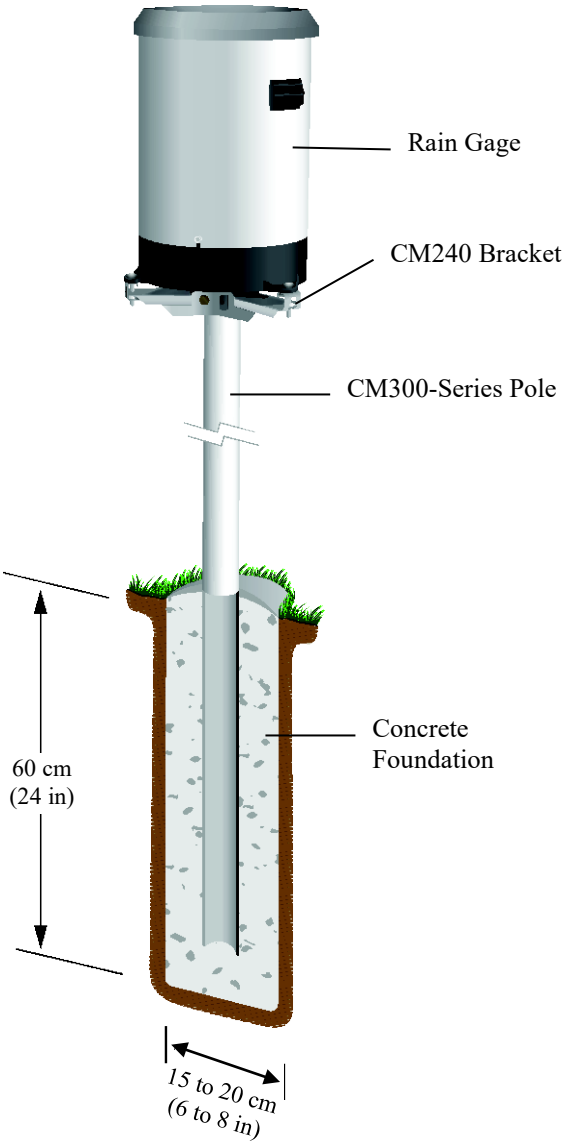

FIGURE 1-1. TB4 Rain Gage with CM240 Bracket and CM310 Mounting Pole

2. Specifications

Material: Stainless Steel

Pipe Size: 3.81 cm (1.5 in) IPS

Outer Diameter: 4.8 cm (1.9 in)

Length
- **CM300:** 58 cm (23 in)
- **CM305:** 119 cm (47 in)
- **CM310:** 142 cm (56 in)

J-Bolts: 1/2 in x 12 in SS with triple-nuts and washers (Pedestal J-Bolt Kit option)

CM300 Series Options (FIGURES 1-1, 3-1, 3-4, 3-6)**:**
- –NP No Pedestal Base
- –PJ Pedestal J-Bolt Kit
- –PS Pedestal Short Legs
- –PL Pedestal Long Legs

There is a series of holes in the Pedestal Leg Base that determine the leg angle and pedestal height as shown in TABLE 3-1.

3. Installation

3.1 Tools List

NOTE Not all tools listed are needed for each mounting pole option.

(2) 1/2-inch combination wrench
(2) 3/4-inch combination wrench
Large Phillips screwdriver
Large flat-bladed screwdriver
Torpedo level
Small sledge hammer (for Pedestal Leg option, to drive optional Ground Spikes)
Form materials (for Pedestal J-bolt Kit option, Section 3.3, *CM300-Series Mounting Pole with Pedestal J-Bolt Kit* *(p. 3)*)

Optional items (must be ordered separately):
Tripod Grounding Kit for Stainless-Steel CM110-Series Tripods
Ground Spike

3.2 CM300-Series Mounting Pole in Concrete Foundation

For permanent installations, CM300-series poles are installed in a concrete foundation. Dig a hole 15 to 20 cm (6 to 8 in) in diameter by 60 cm (24 in) deep (or below frost level). Place the pole in the center of the hole. Fill the hole with concrete, and plumb the pole with a level.

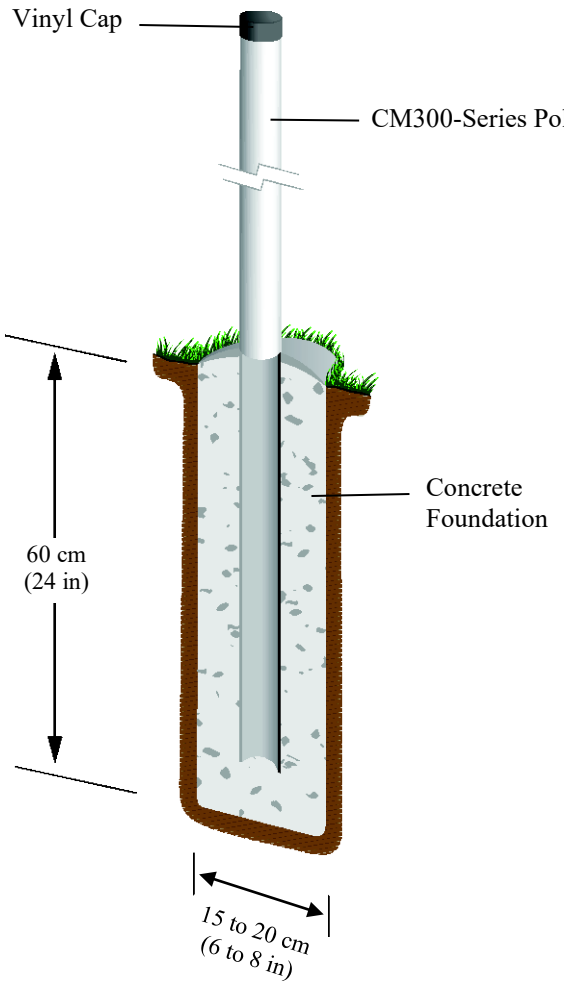

FIGURE 3-1. CM310 Mounting Pole in Concrete Foundation

3.3 CM300-Series Mounting Pole with Pedestal J-Bolt Kit

A CM300-series pole with the Pedestal J-Bolt Kit option is used for permanent installations where there is a need to periodically plumb the pole. J-bolts are installed in a concrete foundation by using the template provided with the kit. The template positions the J-bolts in the 15.25 cm (6 in) diameter circle required by the pedestal.

Construct a form 36 cm (14 in) square (inside dimensions) from 38 x 89 mm (2 x 4 in) precut lumber. Cut two additional 46 cm (18 in) boards from the 38 x 89 mm (2 x 4 in) precut lumber.

Dig a hole 36 x 36 x 60 cm (14 x 14 x 24 in) deep. Depth should exceed typical frost level. Center, and level the form over the hole.

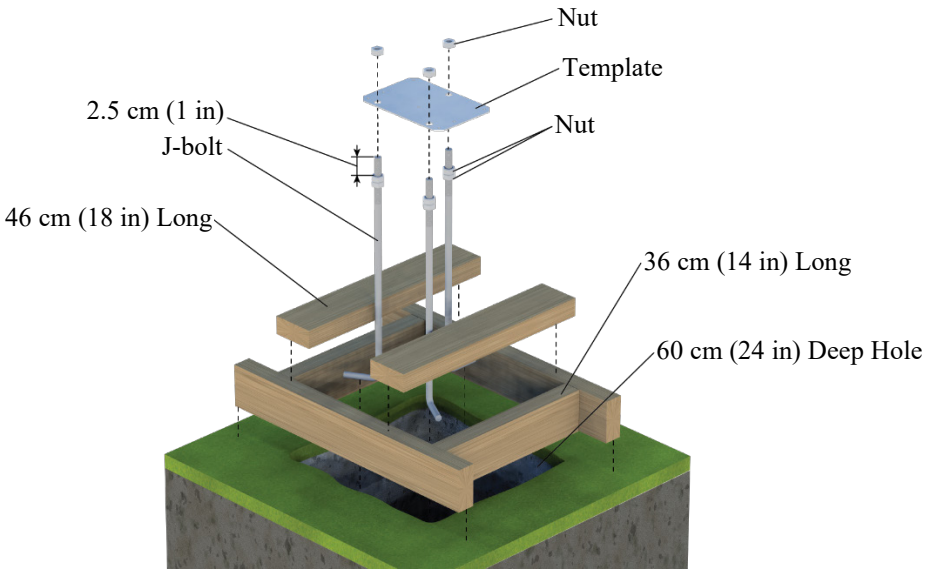

FIGURE 3-2. Base Assembly

Thread two nuts onto each J-bolt, leaving 2.5 cm (1 in) of thread visible between the nuts and end of the J-bolt. Attach the J-bolts to the template with another nut. Angle each J-bolt so it points away from the center of the template.

Place the two 46 cm (18 in) pieces of lumber over the form, leaving room for the J-bolts. Lower the J-bolts into the hole until the template comes to rest on the 46 cm (18 in) boards. Optional: Use wood screws to anchor the template to the two 46 cm (18 in) boards.

Fill the hole and form with concrete.

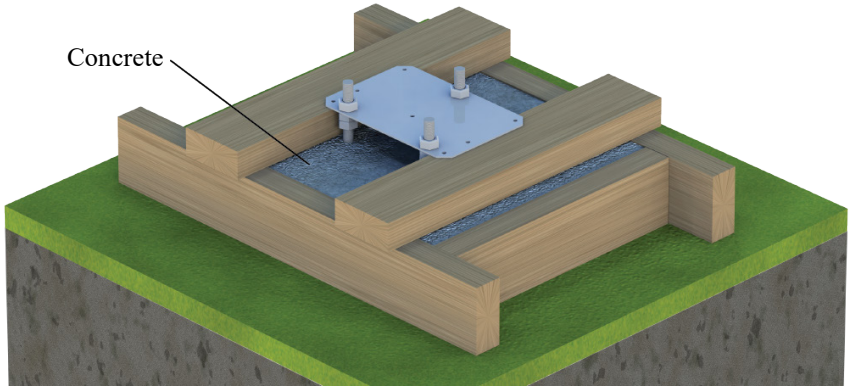

FIGURE 3-3. Base Embedded in Concrete

Remove the template after the concrete has cured. Leave the two nuts below the template on each J-bolt in place. Insert the pole into the pedestal, and tighten the six bolts evenly.

Place a flat washer on each J-bolt, resting it on the two nuts already there. Place the pedestal over the J-bolts and install a flat washer, split washer, and nut on each J-bolt — do not tighten the nuts at this time.

Adjust the lower nuts on each J-bolt to plumb the pole. “Lock” the lower nuts together by using two wrenches. Tighten the upper nuts to secure the pedestal to the J-bolts.

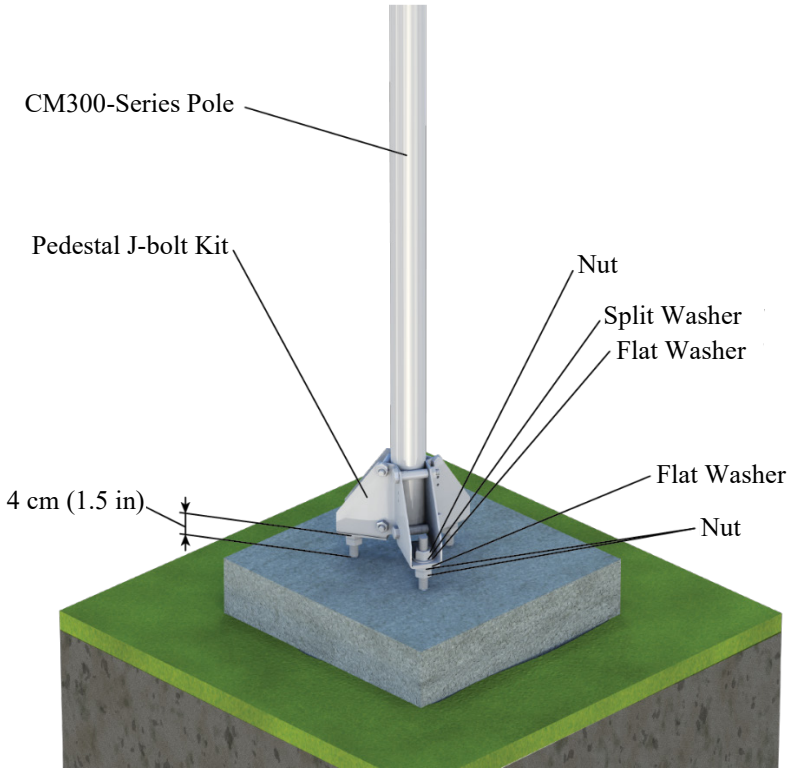

FIGURE 3-4. CM305 Mounting Pole with Pedestal J-Bolt Kit

3.4 CM300-Series Mounting Pole with Pedestal Legs

A CM300-series pole with a Pedestal Leg option is used for temporary installations or for applications where a concrete foundation is not an option. The 58 cm (23 in) Pedestal Legs are adequate for most applications. The 99 cm (39 in) Pedestal Legs provide additional stability for applications where the feet cannot be secured (for example, to the surface of a roof), for extended poles, or for locations with high winds.

Each leg attaches to the pedestal base with an adjustable bolt and quick release pin. The pedestal base has a set of six holes for each leg. The angle of the legs, and resultant pedestal height, is determined by which hole the quick release pin is placed through (see TABLE 3-1).

TABLE 3-1. Pedestal Heights and Base Diameters			
	Hole Position (See FIGURE 3-5)	**Pedestal Height (inches)**	**Base Diameter (inches)**
CM350 Pedestal (23-inch Legs)	A	53 cm (20.8 in)	93 cm (36.5 in)
	B	46 cm (19.1 in)	101 cm (39.8 in)
	C	45 cm (17.6 in)	111 cm (43.6 in)
	D	39 cm (15.5 in)	117 cm (46.1 in)
	E	35 cm (13.6 in)	125 cm (49.1 in)
	F	23 cm (8.9 in)	133 cm (52.4 in)
CM355 Pedestal (39-inch Legs)	A	85 cm (33.5 in)	138 cm (54.5 in)
	B	78 cm (30.7 in)	154 cm (60.7 in)
	C	71 cm (27.9 in)	170 cm (67.0 in)
	D	62 cm (24.3 in)	183 cm (71.9 in)
	E	53 cm (20.8 in)	195 cm (76.8 in)
	F	32 cm (12.5 in)	210 cm (82.8 in)

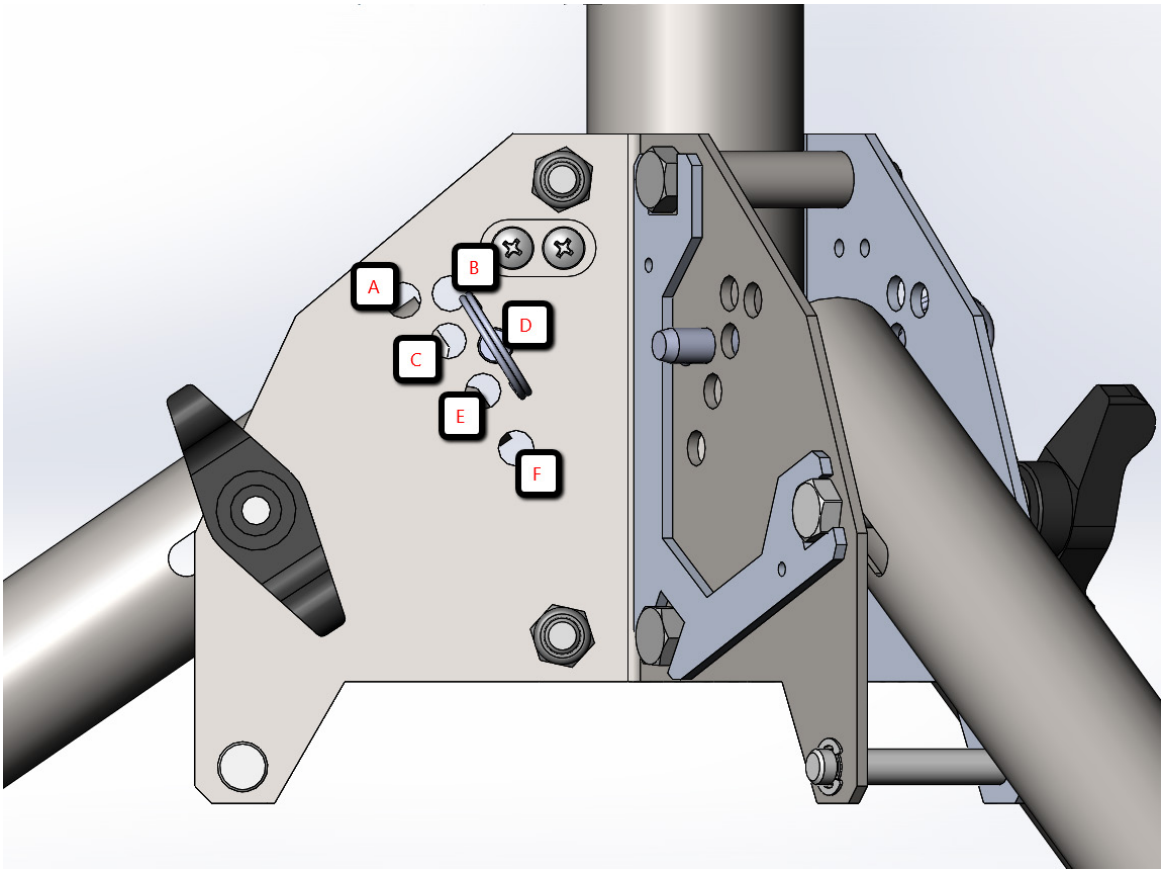

FIGURE 3-5. Pedestal Leg Base Showing Incline Holes

Place the pole into the base and tighten the six bolts evenly. For additional stability, the feet are spiked to the ground using (3) ground spikes, or secured with user-supplied anchors through the holes in the feet.

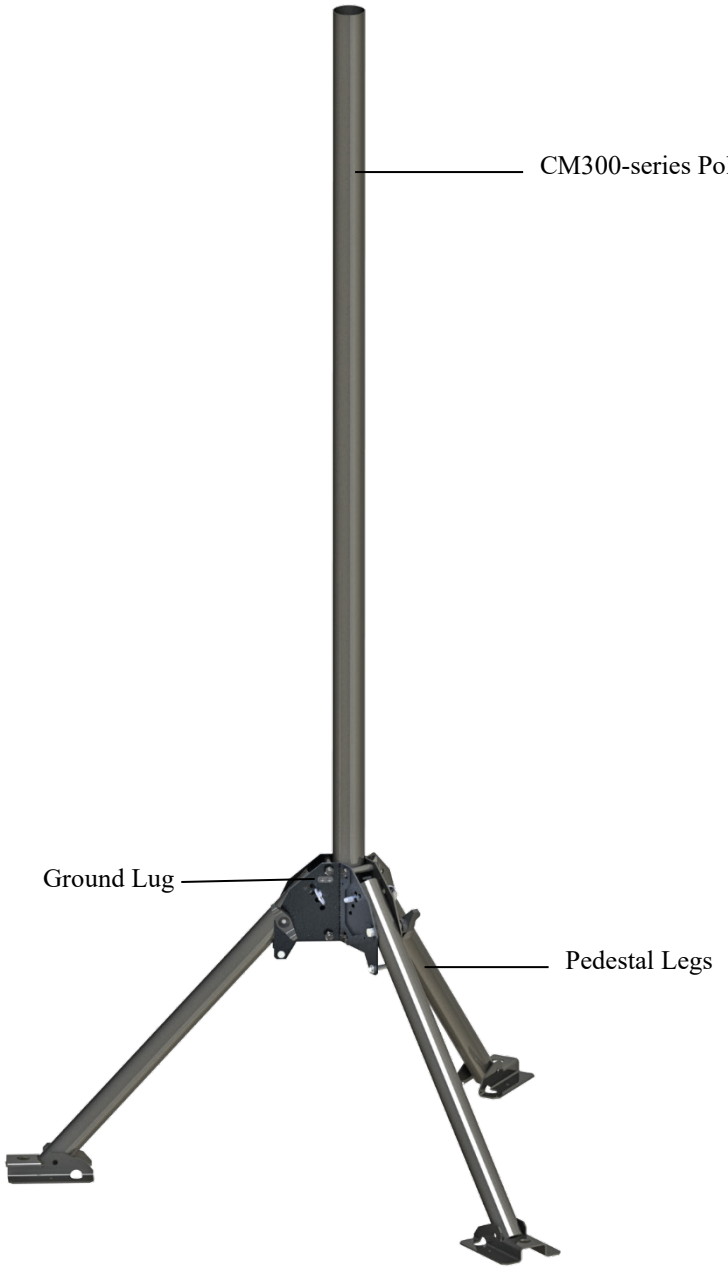

FIGURE 3-6. CM300 Mounting Pole with Pedestal Legs

3.5 CM345 Large Pole Mount

The CM345 large pole mount is used to mount a CM300-series pole to an existing vertical pole or post. Select the 1.5 in vertical pipe option for the CM345 when using a CM300-series pole. The CM345 uses two band clamps to secure the mount to a post with a diameter from 20 to 53 cm (8 to 21 in). It is

recommended to use a CM345 mount on either end of the CM300-series pole to increase stability (FIGURE 3-7).

FIGURE 3-7. Two CM345 Mounts Securing a CM300-Series Pole

To install the CM345, feed the end of one band clamp through the two slots on one end of the mount. Repeat for the other band clamp and the remaining slots. Hold the mount against the post or pole it is being mounted on and wrap the two band clamps around the post. Feed the end of each band clamp into the quick release on the clamp and tighten the band clamp.

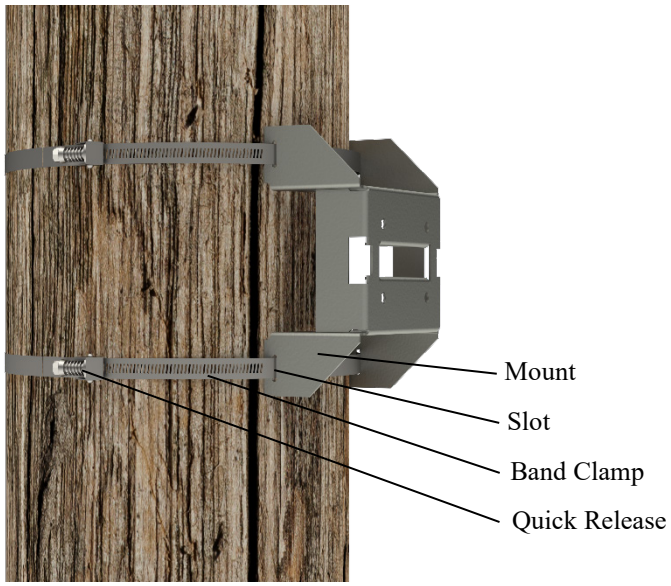

FIGURE 3-8. Mounting the CM345

Attach the CM300-series pole to the CM345 as shown in FIGURE 3-9. Insert the two strut mounts included with the CM345 –V3 option in the slot on the CM345. Place the CM300-series pole between the two strut mounts and secure it in place with the mounting bolt. Position the pole as needed (centered or at one end) to meet the needs of the installation. When using two CM345 mounts, position a CM345 at both ends of the CM300-series pole.

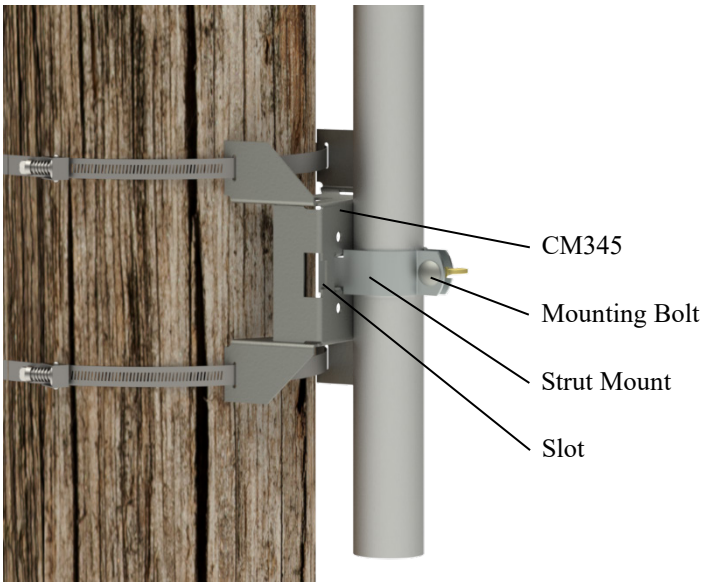

FIGURE 3-9. CM345 Vertical Mount

3.6 Grounding

The Tripod Grounding Kit for Stainless-Steel CM110-Series Tripods may be used to provide an earth ground for the pedestal and associated instrumentation. Attach the earth and enclosure ground wires to the lug on the pedestal base as shown in FIGURE 3-6. The tripod grounding kit also includes a lightning rod for instances where a lightning rod is needed.

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DANGER — MANY HAZARDS ARE ASSOCIATED WITH INSTALLING, USING, MAINTAINING, AND WORKING ON OR AROUND **TRIPODS, TOWERS, AND ANY ATTACHMENTS TO TRIPODS AND TOWERS SUCH AS SENSORS, CROSSARMS, ENCLOSURES, ANTENNAS, ETC**. FAILURE TO PROPERLY AND COMPLETELY ASSEMBLE, INSTALL, OPERATE, USE, AND MAINTAIN TRIPODS, TOWERS, AND ATTACHMENTS, AND FAILURE TO HEED WARNINGS, INCREASES THE RISK OF DEATH, ACCIDENT, SERIOUS INJURY, PROPERTY DAMAGE, AND PRODUCT FAILURE. TAKE ALL REASONABLE PRECAUTIONS TO AVOID THESE HAZARDS. CHECK WITH YOUR ORGANIZATION'S SAFETY COORDINATOR (OR POLICY) FOR PROCEDURES AND REQUIRED PROTECTIVE EQUIPMENT PRIOR TO PERFORMING ANY WORK.

Use tripods, towers, and attachments to tripods and towers only for purposes for which they are designed. Do not exceed design limits. Be familiar and comply with all instructions provided in product manuals. Manuals are available at www.campbellsci.com. You are responsible for conformance with governing codes and regulations, including safety regulations, and the integrity and location of structures or land to which towers, tripods, and any attachments are attached. Installation sites should be evaluated and approved by a qualified engineer. If questions or concerns arise regarding installation, use, or maintenance of tripods, towers, attachments, or electrical connections, consult with a licensed and qualified engineer or electrician.

General

- Protect from over-voltage.
- Protect electrical equipment from water.
- Protect from electrostatic discharge (ESD).
- Protect from lightning.
- Prior to performing site or installation work, obtain required approvals and permits. Comply with all governing structure-height regulations.
- Use only qualified personnel for installation, use, and maintenance of tripods and towers, and any attachments to tripods and towers. The use of licensed and qualified contractors is highly recommended.
- Read all applicable instructions carefully and understand procedures thoroughly before beginning work.
- Wear a **hardhat** and **eye protection**, and take **other appropriate safety precautions** while working on or around tripods and towers.
- **Do not climb** tripods or towers at any time, and prohibit climbing by other persons. Take reasonable precautions to secure tripod and tower sites from trespassers.
- Use only manufacturer recommended parts, materials, and tools.

Utility and Electrical

- **You can be killed** or sustain serious bodily injury if the tripod, tower, or attachments you are installing, constructing, using, or maintaining, or a tool, stake, or anchor, come in **contact with overhead or underground utility lines**.
- Maintain a distance of at least one-and-one-half times structure height, 6 meters (20 feet), or the distance required by applicable law, **whichever is greater**, between overhead utility lines and the structure (tripod, tower, attachments, or tools).
- Prior to performing site or installation work, inform all utility companies and have all underground utilities marked.
- Comply with all electrical codes. Electrical equipment and related grounding devices should be installed by a licensed and qualified electrician.
- Only use power sources approved for use in the country of installation to power Campbell Scientific devices.

Elevated Work and Weather

- Exercise extreme caution when performing elevated work.
- Use appropriate equipment and safety practices.
- During installation and maintenance, keep tower and tripod sites clear of un-trained or non-essential personnel. Take precautions to prevent elevated tools and objects from dropping.
- Do not perform any work in inclement weather, including wind, rain, snow, lightning, etc.

Maintenance

- Periodically (at least yearly) check for wear and damage, including corrosion, stress cracks, frayed cables, loose cable clamps, cable tightness, etc. and take necessary corrective actions.
- Periodically (at least yearly) check electrical ground connections.

Internal Battery

- Be aware of fire, explosion, and severe-burn hazards.
- Misuse or improper installation of the internal lithium battery can cause severe injury.
- Do not recharge, disassemble, heat above 100 °C (212 °F), solder directly to the cell, incinerate, or expose contents to water. Dispose of spent batteries properly.

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