PRODUCT MANUAL

Tripod, Tower, Mount

CM300-Series

Mounting Poles

Revision: 06/2025

RELIABLE MONITORING SINCE 1974

Campbell SCIENTIFIC®

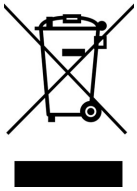
Please read first

About this manual

Please note that this manual was produced by Campbell Scientific Inc. primarily for the North American market. Some spellings, weights and measures may reflect this. In addition, while most of the information in the manual is correct for all countries, certain information is specific to the North American market and so may not be applicable to European users. Differences include the U.S. standard external power supply details where some information (for example the AC transformer input voltage) will not be applicable for British/European use. Please note, however, *that when a power supply adapter is ordered from Campbell Scientific it will be suitable for use in your country*.

Reference to some radio transmitters, digital cell phones and aerials (antennas) may also not be applicable according to your locality. Some brackets, shields and enclosure options, including wiring, are not sold as standard items in the European market; in some cases alternatives are offered.

Recycling information for countries subject to WEEE regulations 2012/19/EU



At the end of this product's life it should not be put in commercial or domestic refuse but sent for recycling. Any batteries contained within the product or used during the products life should be removed from the product and also be sent to an appropriate recycling facility, per The Waste Electrical and Electronic Equipment (WEEE) Regulations 2012/19/EU. Campbell Scientific can advise on the recycling of the equipment and in some cases arrange collection and the correct disposal of it, although charges may apply for some items or territories. For further support, please contact Campbell Scientific, or your local agent.

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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), 142 cm (56 in), or 47 cm (18.5 in) for the CM300, CM305, CM310, and CM315 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.

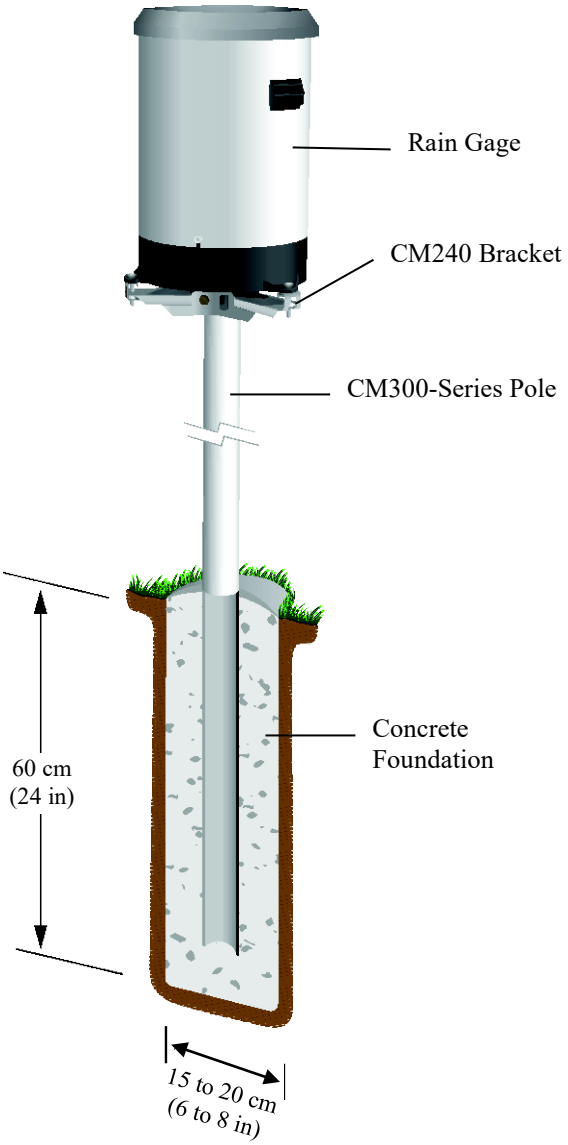

FIGURE 1-1. TB4 Rain Gage with CM240 Bracket and CM310 Mounting Pole

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)
- **CM315:** 47 cm (18.5 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.

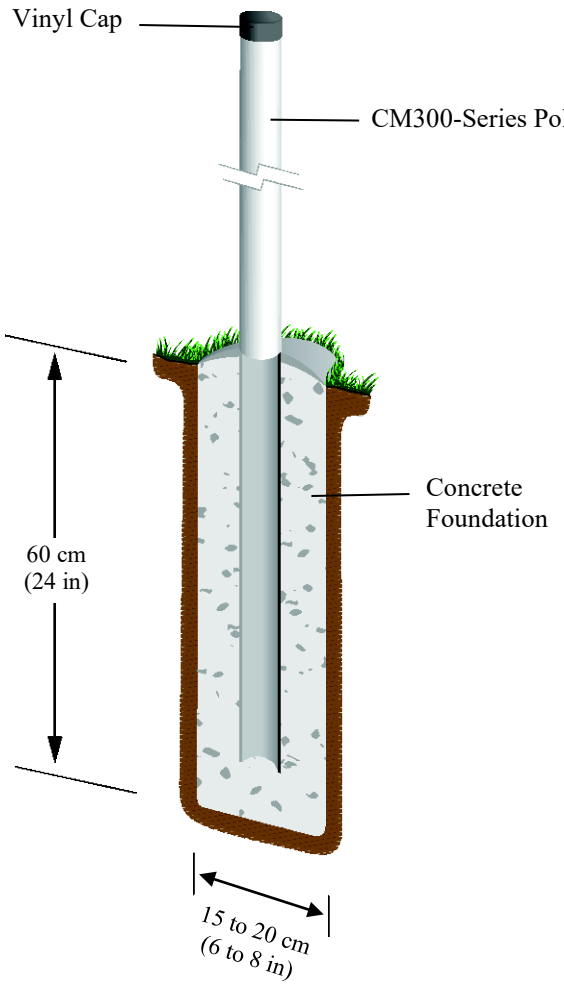

FIGURE 3-1. CM310 Mounting Pole in Concrete Foundation

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.

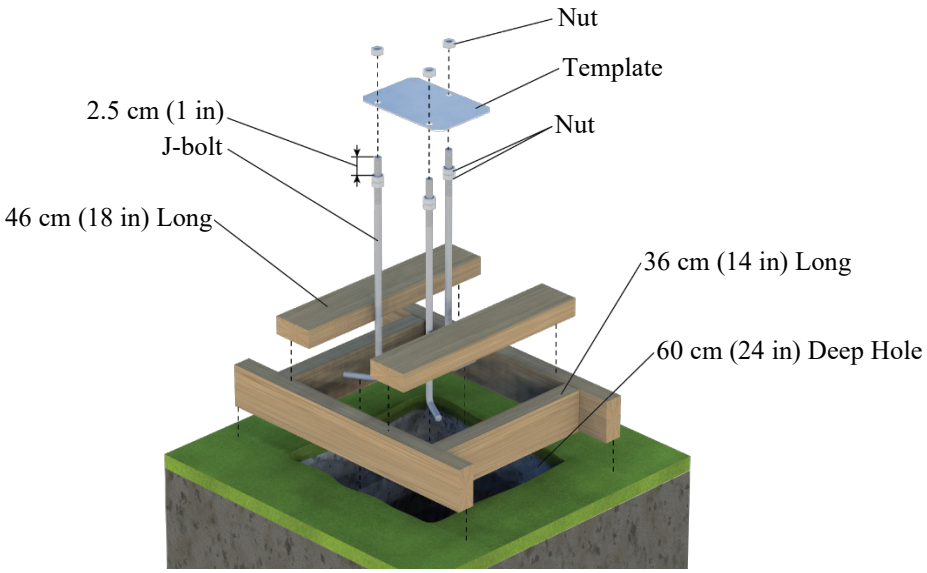

FIGURE 3-2. Base Assembly

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.

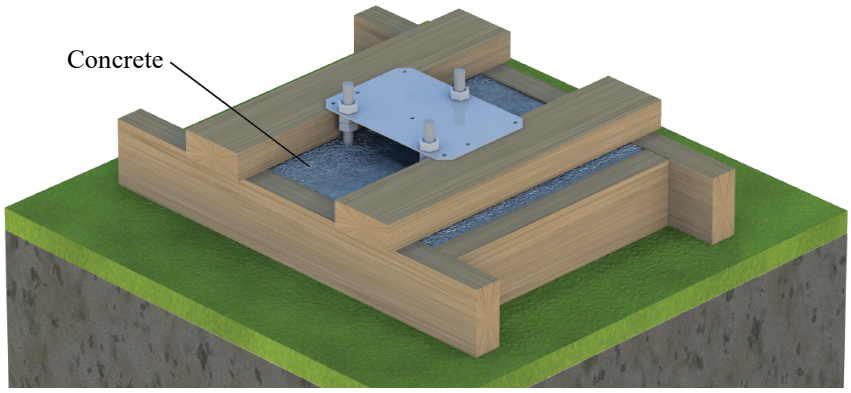

FIGURE 3-3. Base Embedded in Concrete

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.

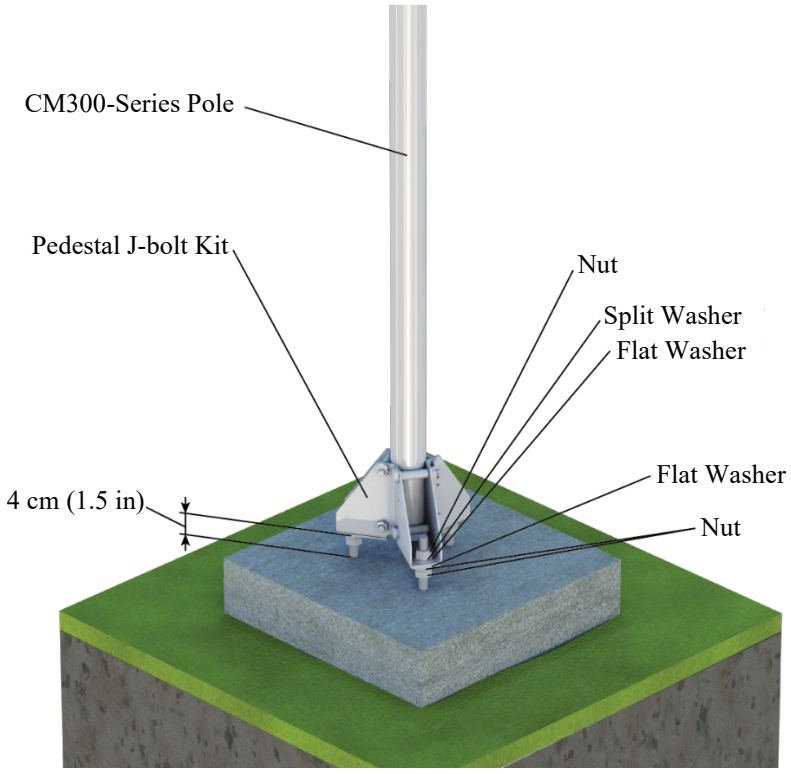

FIGURE 3-4. CM305 Mounting Pole with Pedestal J-Bolt Kit

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)

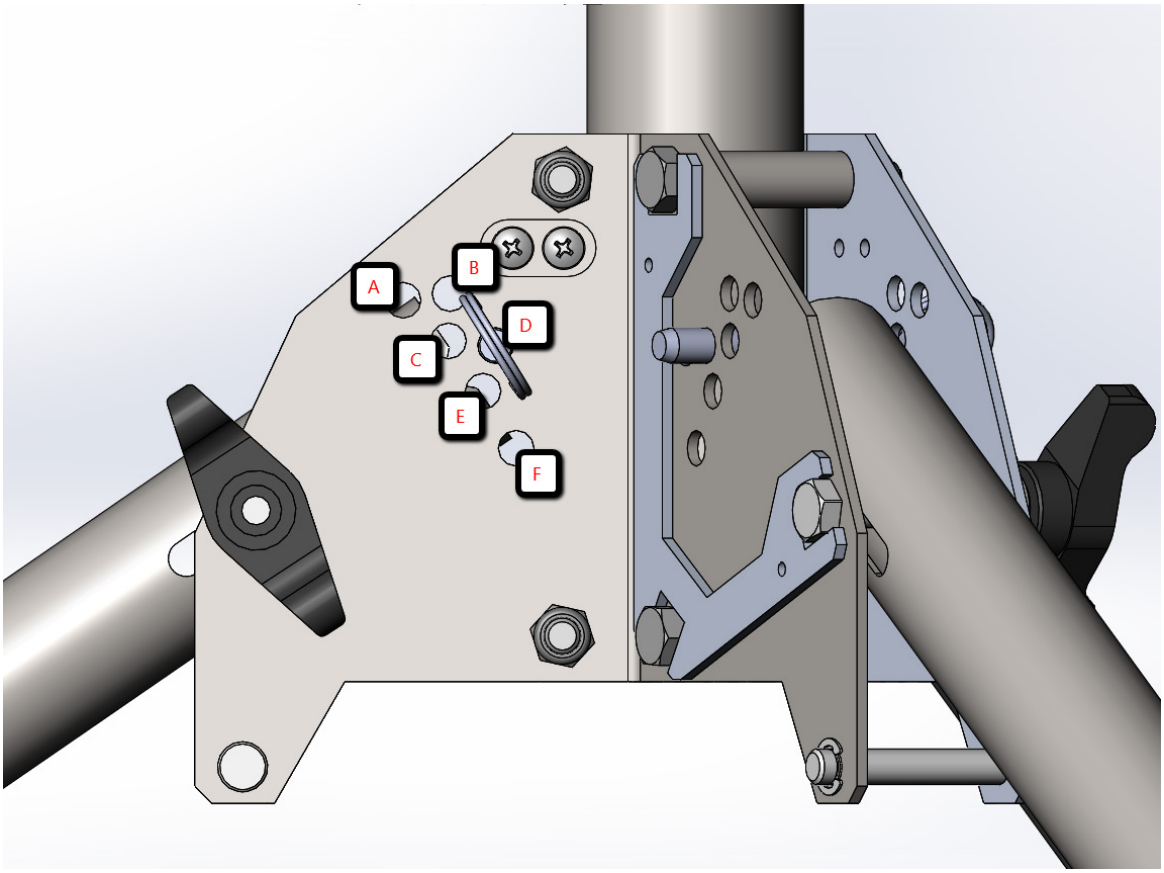

FIGURE 3-5. Pedestal Leg Base Showing Incline Holes

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.

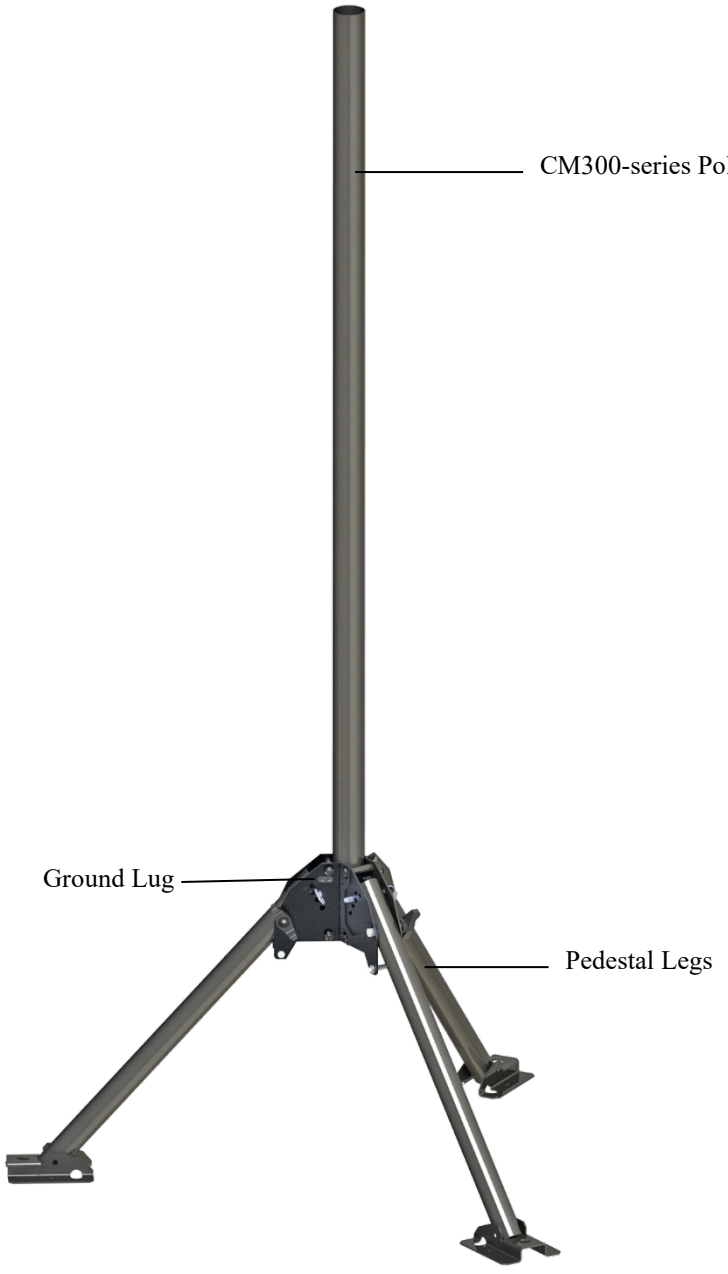

FIGURE 3-6. CM300 Mounting Pole with Pedestal Legs

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.

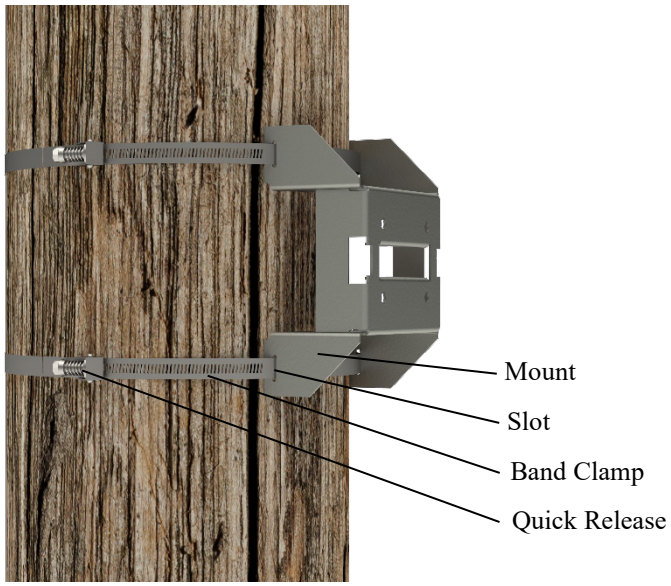

FIGURE 3-8. Mounting the CM345

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.

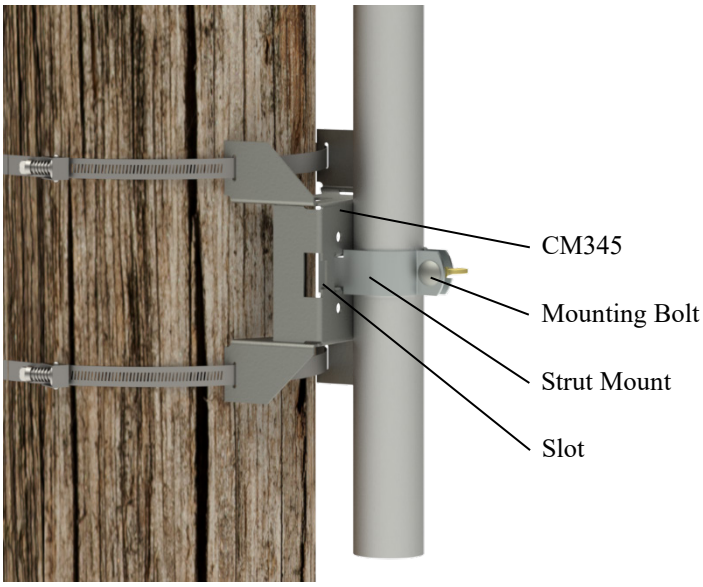

FIGURE 3-9. CM345 Vertical Mount

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.

Limited warranty

Covered equipment is warranted/guaranteed against defects in materials and workmanship under normal use and service for the period listed on your sales invoice or the product order information web page. The covered period begins on the date of shipment unless otherwise specified. For a repair to be covered under warranty, the following criteria must be met:

1. There must be a defect in materials or workmanship that affects form, fit, or function of the device.

2. The defect cannot be the result of misuse.

3. The defect must have occurred within a specified period of time; and

4. The determination must be made by a qualified technician at a Campbell Scientific Service Center/ repair facility.

The following is not covered:

1. Equipment which has been modified or altered in any way without the written permission of Campbell Scientific.

2. Batteries; and

3. Any equipment which has been subjected to misuse, neglect, acts of God or damage in transit.

Campbell Scientific regional offices handle repairs for customers within their territories. Please see the back page of the manual for a list of regional offices or visit www.campbellsci.com/contact to determine which Campbell Scientific office serves your country. For directions on how to return equipment, see Assistance.

Other manufacturer's products, that are resold by Campbell Scientific, are warranted only to the limits extended by the original manufacturer.

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Campbell Scientific will, as a default, return warranted equipment by surface carrier prepaid. However, the method of return shipment is at Campbell Scientific's sole discretion. Campbell Scientific will not reimburse the claimant for costs incurred in removing and/or reinstalling equipment. This warranty and the Company's obligation thereunder is in lieu of all other

warranties, expressed or implied, including those of suitability and fitness for a particular purpose. Campbell Scientific is not liable for consequential damage.

In the event of any conflict or inconsistency between the provisions of this Warranty and the provisions of Campbell Scientific's Terms, the provisions of Campbell Scientific's Terms shall prevail. Furthermore, Campbell Scientific's Terms are hereby incorporated by reference into this Warranty. To view Terms and conditions that apply to Campbell Scientific, Logan, UT, USA, see Terms and Conditions. To view terms and conditions that apply to Campbell Scientific offices outside of the United States, contact the regional office that serves your country.

Assistance

Products may not be returned without prior authorization. Please inform us before returning equipment and obtain a **return material authorization (RMA) number** whether the repair is under warranty/guarantee or not. See Limited warranty for information on covered equipment.

Campbell Scientific regional offices handle repairs for customers within their territories. Please see the back page of the manual for a list of regional offices or visit www.campbellsci.com/contact to determine which Campbell Scientific office serves your country.

When returning equipment, a RMA number must be clearly marked on the outside of the package. Please state the faults as clearly as possible. Quotations for repairs can be given on request.

It is the policy of Campbell Scientific to protect the health of its employees and provide a safe working environment. In support of this policy, when equipment is returned to Campbell Scientific, Logan, UT, USA, it is mandatory that a "Declaration of Hazardous Material and Decontamination" form be received before the return can be processed. If the form is not received within 5 working days of product receipt or is incomplete, the product will be returned to the customer at the customer's expense. For details on decontamination standards specific to your country, please reach out to your regional Campbell Scientific office.

> NOTE:
> All goods that cross trade boundaries may be subject to some form of fee (customs clearance, duties or import tax). Also, some regional offices require a purchase order upfront if a product is out of the warranty period. Please contact your regional Campbell Scientific office for details.

Safety

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, such as those of the FAA in the USA.
- 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.

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.

Use and disposal of batteries

- Where batteries need to be transported to the installation site, ensure they are packed to prevent the battery terminals shorting which could cause a fire or explosion. Especially in the case of lithium batteries, ensure they are packed and transported in a way that complies with local shipping regulations and the safety requirements of the carriers involved.
- When installing the batteries follow the installation instructions very carefully. This is to avoid risk of damage to the equipment caused by installing the wrong type of battery or reverse connections.
- When disposing of used batteries, it is still important to avoid the risk of shorting. Do not dispose of the batteries in a fire as there is risk of explosion and leakage of harmful chemicals into the environment. Batteries should be disposed of at registered recycling facilities.

Avoiding unnecessary exposure to radio transmitter radiation

- Where the equipment includes a radio transmitter, precautions should be taken to avoid unnecessary exposure to radiation from the antenna. The degree of caution required varies with the power of the transmitter, but as a rule it is best to avoid getting closer to the antenna than 20 cm (8 inches) when the antenna is active. In particular keep your head away from the antenna. For higher power radios (in excess of 1 W ERP) turn the radio off when servicing the system, unless the antenna is installed away from the station, e.g. it is mounted above the system on an arm or pole.

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.

WHILE EVERY ATTEMPT IS MADE TO EMBODY THE HIGHEST DEGREE OF SAFETY IN ALL CAMPBELL SCIENTIFIC PRODUCTS, THE CUSTOMER ASSUMES ALL RISK FROM ANY INJURY RESULTING FROM IMPROPER INSTALLATION, USE, OR MAINTENANCE OF TRIPODS, TOWERS, OR ATTACHMENTS TO TRIPODS AND TOWERS SUCH AS SENSORS, CROSSARMS, ENCLOSURES, ANTENNAS, ETC.

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