

**TE525-LC TIPPING BUCKET RAIN GAGE
FOR
METDATA1**

4/97

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WARRANTY AND ASSISTANCE

The **TE525-LC TIPPING BUCKET RAIN GAGE FOR METDATA1** is warranted by CAMPBELL SCIENTIFIC, INC. to be free from defects in materials and workmanship under normal use and service for twelve (12) months from date of shipment unless specified otherwise. Batteries have no warranty. CAMPBELL SCIENTIFIC, INC.'s obligation under this warranty is limited to repairing or replacing (at CAMPBELL SCIENTIFIC, INC.'s option) defective products. The customer shall assume all costs of removing, reinstalling, and shipping defective products to CAMPBELL SCIENTIFIC, INC. CAMPBELL SCIENTIFIC, INC. will return such products by surface carrier prepaid. This warranty shall not apply to any CAMPBELL SCIENTIFIC, INC. products which have been subjected to modification, misuse, neglect, accidents of nature, or shipping damage. This warranty is in lieu of all other warranties, expressed or implied, including warranties of merchantability or fitness for a particular purpose. CAMPBELL SCIENTIFIC, INC. is not liable for special, indirect, incidental, or consequential damages.

Products may not be returned without prior authorization. To obtain a Returned Materials Authorization (RMA), contact CAMPBELL SCIENTIFIC, INC., phone (435) 753-2342. After an applications engineer determines the nature of the problem, an RMA number will be issued. Please write this number clearly on the outside of the shipping container. CAMPBELL SCIENTIFIC's shipping address is:

CAMPBELL SCIENTIFIC, INC.

RMA# _____
815 West 1800 North
Logan, Utah 84321-1784

CAMPBELL SCIENTIFIC, INC. does not accept collect calls.

Non-warranty products returned for repair should be accompanied by a purchase order to cover the repair.



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TE525-LC TIPPING BUCKET RAIN GAGE FOR METDATA1

1. FUNCTION

The TE525 is a smaller adaptation of the standard Weather Bureau tipping bucket rain gage. It measures rainfall at rates up to 2 in. per hour with an accuracy of $\pm 1\%$. Output is a switch closure for each bucket tip. A tip occurs with each 0.01 inch of rainfall. The metric TE525, available on special request, tips with each 0.1 millimeter of rainfall.

2. SPECIFICATIONS

Range of Indication:

Infinite in increments of 0.01 in. (least count) of rainfall. (Metric version: in increments of 0.1 mm.)

Accuracy:

1.0% at 2 inch/hr. or less.

Signal Output:

Momentary switch closure activated by tipping bucket mechanism. Switch closure is approximately 135 ms.

Calibration/Cleaning Frequency:

Sensor is factory calibrated and should not require field calibration. Debris filters, funnel orifices, and bucket reservoirs should be kept clean. Section 4 describes field calibration check and factory recalibration.

Environmental Limits:

Temperature: 0° to +50°C

Humidity: 0 to 100%

Physical Data:

Diameter: 6.25 in. overall

Height: 9.5 in. (metric version 12 in.)

Weight: 2.5 pounds

Receiving Orifice: Gold anodized spun aluminum knife edge collector ring and funnel assembly.

Ring Diameter: 6.064 in. (metric version 9.664 in.)

Resolution: 0.01 in. (metric version 0.1 mm)

Calibration: 16.00 fluid oz. (100 bucket tips)

Mounting: Side bracket with clamps for pole or mast mounting

Material: Aluminum

Cable: 2-conductor, shielded cable, 25 ft. standard length.

NOTE: The black outer jacket of the cable is Santoprene® rubber. This compound was chosen for its resistance to temperature extremes, moisture, and UV degradation. However, this jacket will support combustion in air. It is rated as slow burning when tested according to U.L. 94 H.B. and will pass FMVSS302. Local fire codes may preclude its use inside buildings.

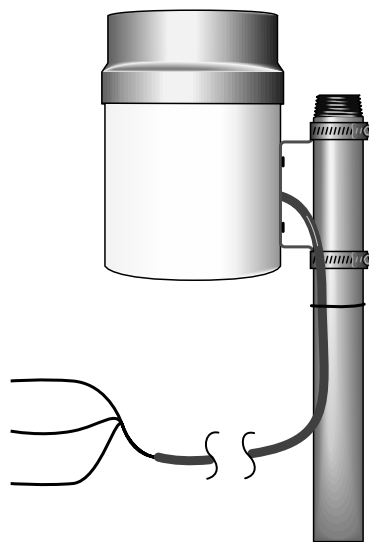


FIGURE 1. TE525 Tipping Bucket Rain Gage

3. INSTALLATION

3.1 LOCATION

The rain gage should be mounted in a relatively level spot which is representative of the surrounding area. The lip of the funnel should be horizontal and at least 30 cm. above the ground. It should be high enough to be above the average snow depth. The ground surface around the rain gage should be natural vegetation or gravel. It should not be paved.

The rain gage should be placed away from objects that obstruct the wind. The distance should be 2 to 4 times the height of the obstruction.

When leveling, be sure that the funnel is properly seated in the body of the gage and that:

- the orifice is level
- the body of the sensor is vertical (plumb).

3.2 MOUNTING

The TE525 rain gage mounts to a 2 inch post or pipe. Set the post or drive the pipe as nearly vertical as possible. Use the enclosed hose clamps to mount the gage as shown in Fig. 1. The lip of the gage should be at least 2 inches above the post or pipe. Level the rain gage after mounting it.

NOTE: Before final leveling, press either end of the bucket down against its stop to make sure the bucket is NOT hung up in the center.

3.3 CONNECTION

The TE525 cable is attached to the MetData1 connector labeled #5.

4. DATALOGGER PROGRAMMING

NOTE: Information in this section is not necessary when programming the MetData1 with the Short Cut Program Builder software.

The TE525 is measured using Instruction 3 with the switch closure configuration code. A multiplier of 0.01 converts the output to inches. A multiplier of 0.254 converts the output to millimeters.

The metric TE525 uses a multiplier of 0.1 to convert the output to millimeters. A multiplier of 0.00394 converts the output to inches.

MetData1 Datalogger Instruction:

01:	P3	Pulse
01:	1	Rep
02:	2	Pulse Input Channel
03:	2	Switch Closure
04:	1*	Loc [:Rain (mm)]
05:	0.1	Mult
06:	00	Offset

* Proper entry will vary with input location assignment.

4. MAINTENANCE

The funnel and bucket mechanism must be kept clean. Routinely check for and remove any foreign material, dust, insects, etc. The following calibration check is advised every 12 months.

Field Calibration Check:

- (1) Secure a metal can that will hold at least one quart of water.
- (2) Punch a very small hole in the bottom of the can.
- (3) Place the can in the top funnel of the rain gage and pour 16 fluid ounces (1 pint) of water into the can. (A 16 oz. soft drink bottle filled to within 2.5 inches of the top may be used for a rough field calibration. An exact volume will allow for a more precise calibration).
- (4) If it takes less than 45 minutes for this water to run out, the hole in the can is too large.
- (5) One hundred tips plus or minus three tips should occur.
- (6) Adjusting screws are located on the bottom adjacent to the large center drain hole. Adjust both screws the same number of turns. Rotation clockwise increases the number of tips per 16 oz. of water; counter clockwise rotation decreases the number of tips per 16 oz. of water. One half turn of both screws causes a 2% to 3% change.
- (7) Check and re-level the rain gage lid.

Factory Calibration:

If factory calibration is required, send the TE525 to:

Texas Electronics
P.O. Box 7225, Inwood-Station
Dallas, Texas 75209
Phone: (214) 631-2490