



TR-525 Series Rainfall Sensors User's Manual

Models:

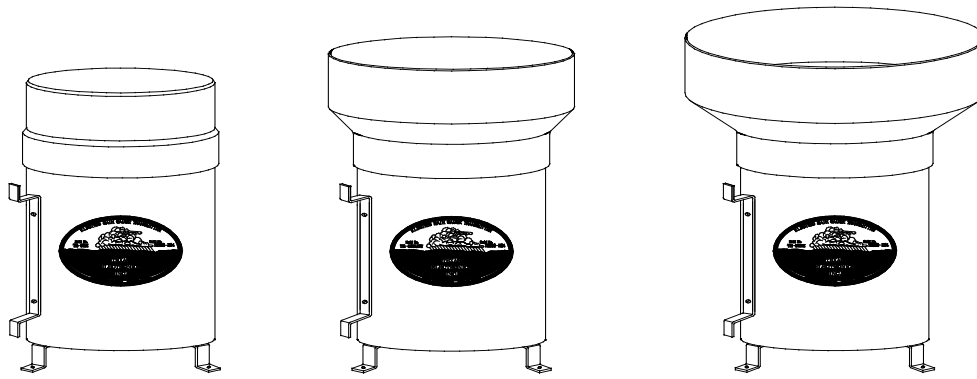
TR-525I

TR-525I (m)

TR-525USW

TR-525USW (m)

TR-525M



Model TR-525 Series Rainfall Sensors

DESCRIPTION

The sensor consists of a gold anodized aluminum collector funnel with a knife-edge that diverts the water to a tipping bucket mechanism. A magnet is attached to the tipping bucket, which actuates a magnetic switch on each tip of the bucket. The water drains out of the bottom of the housing, so the sensor requires no attention or servicing. Connecting the sensor to an event counter on a data logger or display module allows for electronics record keeping of accumulated rainfall.

The aluminum housing is finished with a white powder-coat to withstand years of exposure to the environment.

SPECIFICATIONS

	<u>TR-525I</u>	<u>TR-525USW</u>	<u>TR-525M</u>
Resolution:	0.01" or .2 mm	0.01" or .2 mm	0.1 mm
Accuracy:			
English	+/-1.0% at 2"/hr or less	+/-1.0% at 2"/hr or less	+/-1.0% at 2"/hr or less
Metric	1.0% at 50 mm/hr or less	1.0% at 50mm/hr or less	1.0% at 50mm/hr or less
Average Switch Closure Time:	135 ms	135 ms	135 ms
Maximum Bounce Settling Time:	0.75 ms	0.75 ms	0.75 ms
Maximum Switch Rating:	30 VDC @ 2A 115 VAC @ 1A	30 VDC @ 2A 115 VAC @ 1A	30 VDC @ 2A 115 VAC @ 1A
Temperature Limits:			
Operational Temperature:	32 to 158°F	32 to 158°F	32 to 158°F
Storage Temperature:	-40 to 185°F	-40 to 185°F	-40 to 185°F
Humidity Limits:	0 to 100%	0 to 100%	0 to 100%
Height:	10.25"	11.125"	12"
Weight:	4 lbs.	6 lbs.	8 lbs.
Receiving Orifice Diameter:	6.060"	8.000"	9.664"
Cable:	25' 24 Gauge 2 Cnd.	25', 24 Gauge 2 Cnd.	25', 24 Gauge 2 Cnd.
Maintenance:	Occasional cleaning of debris from filter screen may be required.	Occasional cleaning of debris from filter screen may be required.	Occasional cleaning of debris from filter screen may be required.
Warranty:	3 years	3 years	3 years

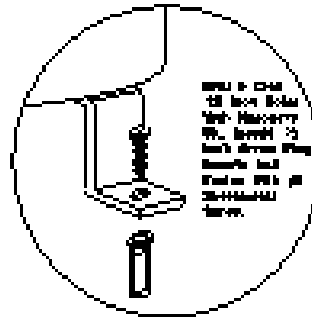
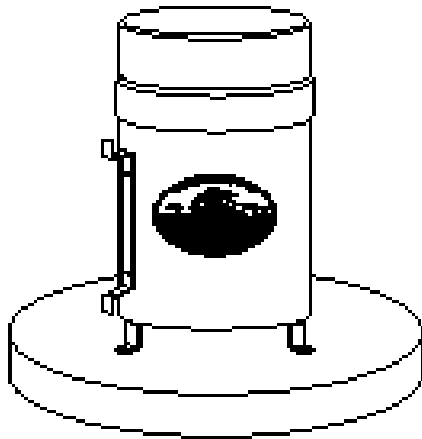
ORDERING INFORMATION

Model #	Description
TR-525I	Rain Gauge, 6.06" collector, English (Please specify for calibration of 0.2 mm/tip)
TR-525i (m)	Rain Gauge, 6.06" collector, .2 MM
TR-525USW	Rain Gauge, 8.00" collector, English
TR-525USW (m)	Rain Gauge, 8.00" collector, .2MM
TR-525M	Rain Gauge, 25 mm collector, Metric

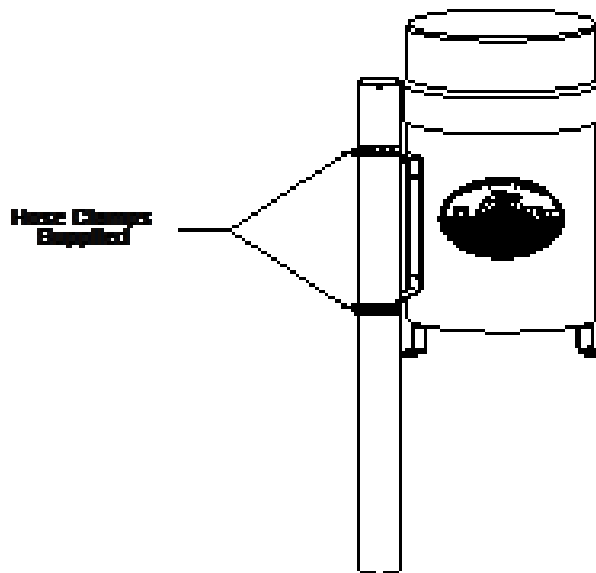
Optional Parts / Accessories

Logger	Pendant Datalogger
MB-525	Pole Mounting Base
FC-525	Field Calibration Kit
BB-525	Bird Repellant
HT-525	Heater, 120 VAC

MODEL 525 MOUNTING EXAMPLES



Model 525 Surface Mounted On a Movable Base



Model 525 Mount Mounted

MODEL 525

TIPPING BUCKET RAIN GAUGE TRANSMITTER

INSTALLATION INSTRUCTIONS

A clear and unobstructed mounting location is necessary to obtain accurate rainfall readings.

This transmitter is designed to be mounted two ways, by surface mounting or mast mounting. Surface mounting is recommended whenever possible. The transmitter housing must be mounted in a level position and in a location free from vibration. If mast mounted, make sure that the mast is properly guyed so that vibration in high winds is kept to a minimum.

THE FOLLOWING IS VERY IMPORTANT:

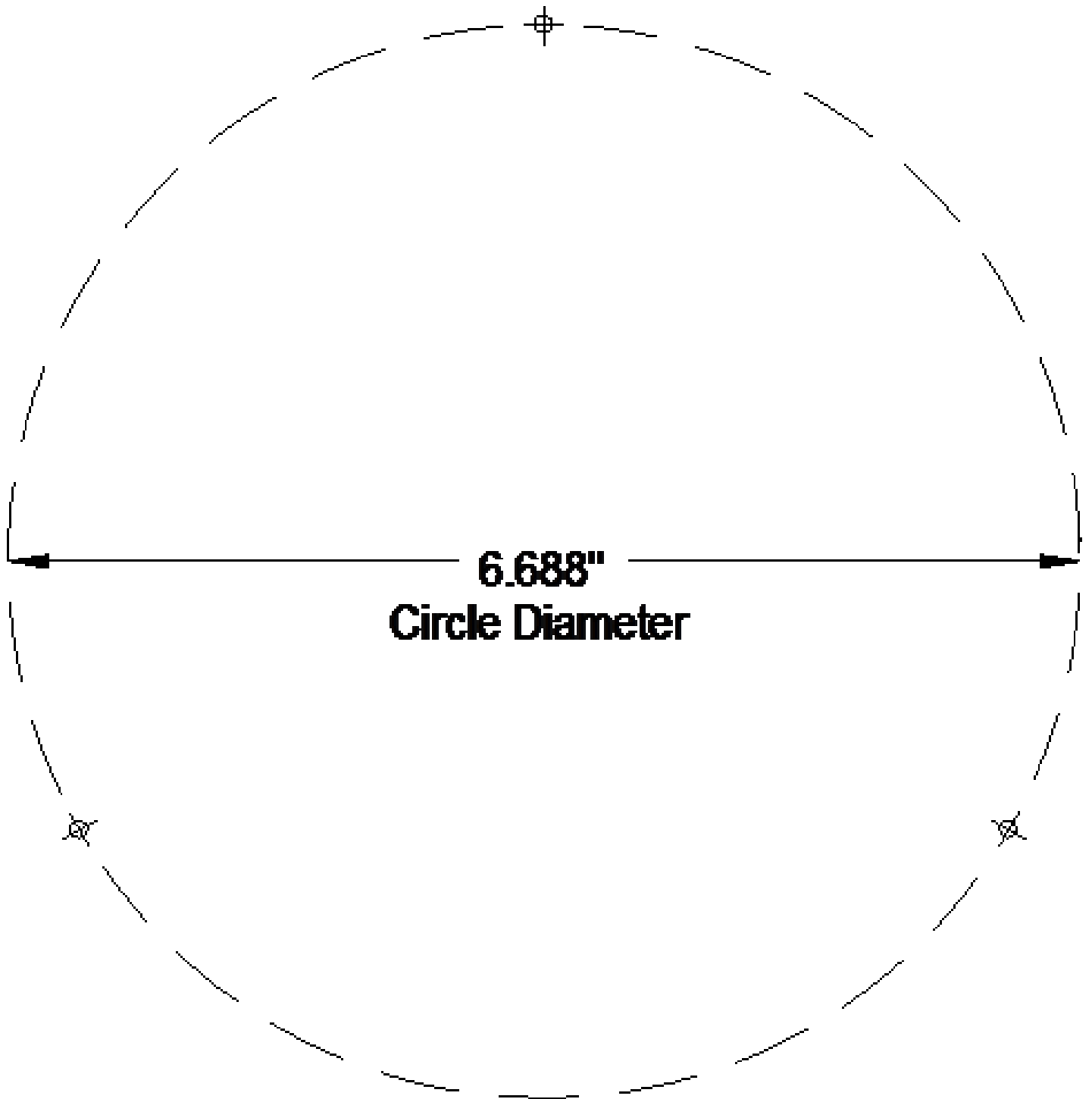
After transmitter installation, remove the gold funnel and observe the black tipping bucket. It should not be held in a dead center position by the magnetic attraction of the bucket magnet and the magnetic switch. Press either end of the bucket down against the stop to be sure it is not centered.

The connecting cable between transmitter and indicator can be shortened or lengthened as required.

The funnel and tipping bucket mechanism should be cleaned periodically. An accumulation of dirt, bugs, etc. on the tipping bucket will adversely affect the calibration.

REMOVE AND USE THIS TEMPLATE TO BASE MOUNT THE RAINFALL SENSOR

MODELS TRP-525I, TRP-525M, TRP-525USW MOUNTING TEMPLATE



FIELD CALIBRATION

TR-525USW

Absolutely accurate calibration can be obtained only with laboratory equipment, but an approximate field check can easily be made. The tipping bucket mechanism is a simple and highly reliable device. The transmitter must be located in a clear area, away from trees, buildings, etc. To obtain accurate readings, the unit must be mounted level and be free of foreign material, dust, or other debris. The transmitter must be calibrated with the rate of flow of water through the tipping bucket mechanism under control. At least 36 seconds should be allowed to fill one side of the tipping bucket. This represents a maximum flow rate of one inch of rain per hour. If the flow exceeds that rate, then the instrument will read low even if properly calibrated. Decreasing the rate of flow, on the other hand, will not materially affect calibration. The reason for this is obvious if the tipping bucket assembly is observed when the weight of the water begins to tip the bucket. Some time is required for the bucket to tip (a few milliseconds). During a portion of this time, water flows into the empty bucket. This creates a small margin of error and the faster the flow rate, the greater the error. At flow rates of one inch per hour or less, water drips slowly into the bucket instead of flows, allowing the bucket to tip between drips, and eliminate the cause of the error.

TO CHECK CALIBRATION:

A field calibration kit, the FC-525, is available from Texas Electronics, Inc. It consists of a holding tank, pre-measured beaker, two orifices, cleaning tools and instructions.

FIELD CALIBRATION

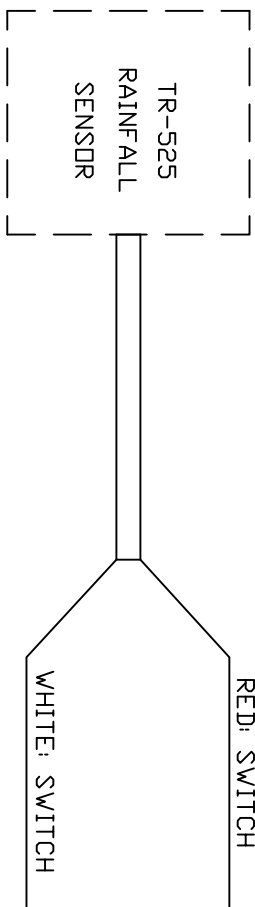
TR-525I & TR-525M

Absolutely accurate calibration can be obtained only with laboratory equipment, but an approximate field check can be easily made. The tipping bucket mechanism is a simple and highly reliable device. The transmitter must be located in a clear area, away from trees, buildings, etc. It must also be mounted level. Accurate readings will not be obtained unless the transmitter is mounted in a level position. The mechanism must be clean. Any accumulation of foreign material, dust, etc. will alter the calibration of this unit. The transmitter must be calibrated with the rate of flow of water through the tipping bucket mechanism under control. At least 36 seconds should be allowed to fill one side of the tipping bucket. This represents a maximum flow rate of on inch of rain per hour. If the flow rate is increased, then the instrument will read low (if properly calibrated). Decreasing the rate of flow will not materially affect the calibration. The reason for this is obvious if the tipping bucket assembly is observed in operation...with water falling into one side of the tipping bucket, there comes a point when the weight of this water starts to tip the bucket. Some time is required for the bucket to tip (a few milliseconds). During the first 50% of this tipping time, water continues to flow into the filled bucket; the last 50% of this tipping time, water flows into the empty bucket. The amount of water flowing during the first 50% of the time is error, the faster the flow rate the greater the error. Now at flow rates of one inch per hour (100 bucket fillings) or less, the water actually drips into the bucket rather than flowing. Under this condition, the bucket tips between drips, and no error water is added to a full moving bucket.

TO CHECK CALIBRATION:

A field calibration kit is available from Texas Electronics, Inc. Model No. FC-525 is a kit that consists of a holding tank, pre-measured beaker, two orifices, cleaning tools and instructions.

WIRING DIAGRAM




TYPICAL OUTPUT:

- TR-525i 0.01" tip (4.73mL)
- TR-525M 0.10mm per tip (4.73mL)
- TR-525USW 0.01" per tip (8.23mL)
- TR-525S 0.01" per tip (8.23mL)
- TR-4 0.01" per tip (1.95mL)

OPTIONAL OUTPUT

- TR-525i (metric) 0.2mm per tip (3.72mL)

Texas Electronics, Inc.			
<i>The Gold Standard in Weather Instrumentation Since 1957</i>			
			
TITLE		TR-525 RAINFALL SENSOR	
WIRING DIAGRAM			
SIZE	FSCM NO.	DWG NO.	REV
A		3001	A
SCALE			SHEET 1-1

Warranty

Texas Electronics, Inc. (hereafter TEI) warrants the equipment manufactured by it to be free from defects in material and workmanship. Upon return, transportation charges prepaid to TEI, within three (3) years of original shipment of sensors and one (1) year of original shipment of electronics, recorders and indicators, TEI will repair or replace, at its option, any equipment which it determines to contain defective material or workmanship, and will return said equipment to purchaser, F.O.B., TEI. Texas Electronics shall not be obligated however to repair or replace equipment which has been repaired by others, abused, improperly installed, altered or otherwise misused or damaged in any way. TEI will not be responsible for any dismantling, re-assembly, or reinstallation charges.

This warranty is in lieu of all other warranties, expressed or implied. TEI shall not be liable for any special, indirect, incidental or consequential damages claimed in connection with any rescission of this agreement by purchaser.