

**THE
THORGUARDIAN**

INSTALLATION AND OPERATIONS

MANUAL

THE THORGUARDIAN

THE THORGUARDIAN IS THE FIRST, TOTALLY INTEGRATED ADVANCE WARNING SYSTEM FOR LIGHTNING. THOR GUARD HAS COMBINED ITS STATE OF THE ART LIGHTNING PREDICTION TECHNOLOGY, AUTOMATICALLY ACTIVATED AIR-HORNS AND STROBE LIGHTS, FOR SINGLE LOCATION APPLICATIONS. THE ENTIRE SYSTEM, EASILY INSTALLED OUTDOORS AS A SINGLE UNIT, MONITORS THE POTENTIAL FOR LIGHTNING WITHIN AN AREA OF APPROXIMATELY TWO MILES IN RADIUS. WHEN THOR GUARD SENSES A HAZARDOUS CONDITION, THE SYSTEM IS DESIGNED TO AUTOMATICALLY PROVIDE BOTH AUDIBLE AND VISUAL ALERTS. UNDER NORMAL CONDITIONS THE AIR-HORNS HAVE A RANGE OF APPROXIMATELY 700 YARDS, IN A 360 PATTERN.

TABLE OF CONTENTS

Choosing the location for the THORGUARDIAN	Page 2
Testing & Cleaning Sensor	Page 2
Mounting and Assembly Instructions	Page 3
Troubleshooting Guide	Page 4
Reference Codes	Page 5
Illustration	Page 6

ITEMS YOU WILL NEED FOR INSTALLATION

4' Galvanized Pipe (1" diameter), one end threaded for mounting
Mounting hardware to secure tripod
Tools: adjustable wrench, slotted/phillips screwdriver

Choosing the Location for the THORGUARDIAN

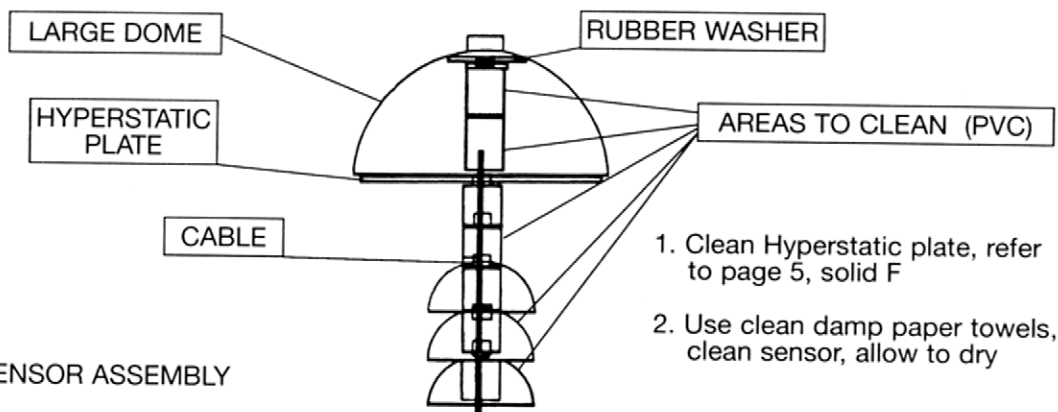
The THORGUARDIAN should be as centrally located for the area of desired coverage, as possible. The roof of an existing building or shelter will be the most likely location as long as it has access to 117VAC/.5A. power that also has a confirmed ground. The choice of what method to use to mount the system will be dependent upon the type of existing roofing material, the design of the roof, and the proximity of other equipment that may adversely affect the performance of the system. However, the system is primarily designed to be mounted on a 3' tripod. If a roof location is not possible, the system may be mounted on a post or pole, as long as the power requirements, above, are also met.

NOTE: THIS SYSTEM WILL NOT OPERATE PROPERLY UNLESS THE SENSOR IS MOUNTED WITH A CLEAR "VIEW" OF THE SURROUNDING SKY. IF A SUITABLE LOCATION CANNOT BE FOUND, DO NOT INSTALL THE SYSTEM!

The following should be considered when locating the system:

- A good location for a tripod mount.
- At least 10' from lightning rods.
- At least 15' from (and higher than) air conditioning units, vents, fans, etc.
- At least 15' from other antennas; e.g. TV, VHF, etc.
- Never under overhanging trees and high power lines.
- Outside a 30-degree cone from building structures or trees (trees absorb signal).
- As far as possible from electric chargers or transformers.
- A metal roof is not advisable, but if necessary isolate the tripod from the roof.
- High enough so that curious hands cannot inadvertently touch the Sensor Plate, thereby activating the system.
- **INSURE THAT ANY MAST OR TRIPOD UTILIZED TO MOUNT THE THORGUARDIAN IS NOT GROUNDED TO AN EXISTING LIGHTNING BONDING OR GROUNDING SYSTEM. THE SYSTEM WILL BE GROUNDED THROUGH THE AVAILABLE GROUND FROM THE EXISTING AC POWER SOURCE. PLEASE NOTE THAT FOR SOLAR APPLICATIONS THOR GUARD WILL PROVIDE A SEPARATE CABLE THAT WILL NEED TO BE PROPERLY GROUNDED.**

SENSOR MUST BE ACCESSIBLE FOR REGULAR CLEANING (See Below, also "F", p.5).



SENSOR ASSEMBLY

Mounting and Assembly Instructions

The system requires 117VAC/.5A. power that should be constant and with a confirmed ground. A “typical” installation will employ a 3’ tripod and 4’ mounting pipe, threaded at one end. Solar is an option at an additional cost and involves slightly different mounting instructions concerning the grounding of the system. Pole or Post mounting is also available with separate instructions.

1. SECURE THE TRIPOD TO THE ROOF SURFACE WITH THE EQUIVALENT OF (2) LAG BOLTS IN EACH LEG AND INSTALL THE 4’ MOUNTING PIPE WITH THREADS UP. TIGHTEN ALL NUTS AND BOLTS.
2. LOCATE 4’ ALUMINUM MOUNTING BRACKET AND ATTACH TIGHTLY TO PIPE.
3. PREPARE TO MOUNT THE MASTER CONTROL BOX BY LOWERING THE TWO SUPPORT ARMS FROM MOUNTING BRACKET. LOCATE (2) $\frac{1}{4}$ 20 X $\frac{1}{2}$ BOLTS AND FASTEN SUPPORT ARMS TO THE OUTSIDE HOLES ON THE TOP OF THE MASTER CONTROL BOX. COMPLETE MASTER CONTROL BOX MOUNTING BY SECURING (1) U-BOLT TO THE LOWER/CENTER MOUNTING HOLES ON THE BOX. UTILIZING AN ADDITIONAL U-BOLT AT THE TOP OF THE BOX IS OPTIONAL.
4. ATTACH THE HORN CLUSTER TO THE RIGHT THREADED PIPE AND TURN TILL TIGHT. THE CABLE WILL ATTACH AT THE REAR OF THE MOUNTING BRACKET WITH ENCLOSED (3) PLASTIC CLAMPS WITH SCREWS.
5. ATTACH THE SENSOR TO THE LEFT THREADED PIPE AND TURN TILL TIGHT. AS WITH THE HORN CABLE, THE SENSOR CABLE WILL ATTACH TO THE REAR OF THE MOUNTING BRACKET UTILIZING (3) PLASTIC CLAMPS.
6. ATTACH STROBE LIGHT PLATE (WITH STROBE LIGHT) TO THE TOP CENTER OF MOUNTING BRACKET BY USING THE (2) 6-32 SELF TAPPING SCREWS. ROUTE THE CABLE OUT THE BACK AND BUNDLE WITH HORN AND SENSOR CABLE USING TIE-WRAPPS.
7. PROVIDE A SERVICE LOOP WITH CABLES BEHIND BOX AND FIRST BRING SENSOR CABLE THROUGH RIGHT HOLE IN THE BOTTOM OF BOX. SLIDE BLACK NUT OVER CABLE AND SECURE STRAIN RELIEF TO BOX. TIGHTEN EXTERNAL BUSHING AND RUN CABLE TO PLUG IN L-25 COMPUTER LOCATED AT THE TOP OF BOX. SECURE CABLE IN GRAY CLAMPS ON INSIDE WALL.
8. RUN HORN AND STROBE CABLES THROUGH LEFT HOLE IN THE BOTTOM OF BOX AND TIGHTEN EXTERNAL BUSHING. LOCATE RELAY BOARD (CENTER BOTTOM) AND ATTACH (4) HORN WIRES TO BLACK SCREW LUGS MATCHING WIRE COLORS AT THE TOP OF THE BOARD. LIFT THE WHITE CONNECTOR AND ATTACH STROBE WIRES TO RED AND BLACK LOCATION.
9. ATTACH RED WIRE TO BATTERY AND SECURE TIGHTLY. PRESS BLUE BUTTON ON RELAY BOARD TO SOUND HORNS.
10. PLUG AC CORD TO WEATHERPROOF OUTLET AND GREEN NEON LIGHT SHOULD ILLUMINATE.
11. REMOVE TIMER CABLE FROM RELAY BOARD AND REMOVE TIMER FROM SOCKET. SET TIME AND ALARM SETTINGS. REPLACE TIMER AND RE-CONNECT CABLE TO RELAY BOARD.
12. PUSH THE TEST BUTTON ON L-25 TO INITIATE CORRECT OPERATION. DO A FINAL CHECK TO ENSURE ALL MOUNTING NUTS HAVE BEEN TIGHTENED.

TROUBLESHOOTING GUIDE

PROBLEM: GREEN POWER LIGHT IS OFF. CHECK EXTERNAL AC SOURCE FIRST.

SOLUTION: IF EXTERNAL AC ACTIVE THEN LIGHT MAY BE BURNED OUT.

THERE IS A CIRCUIT BREAKER WITHIN THE SWITCH. TURN POWER SWITCH OFF/THEN ON TO SEE IF BREAKER CAN BE RESET. IF NOT:

REMOVE THE BLACK TRANSFORMER. AND MEASURE THE AC VOLTAGE. IF LINE VOLTAGE IS PRESENT AND THE OUTLET IS ZERO, THE POWER SWITCH MAY BE BAD. DISCONNECT TIMER FROM RELAY BOARD. LOOSEN EXTERNAL STRAIN RELIEF, LOOSEN AC BRACKET MTG. SCREWS, AND REMOVE AC BRACKET ASSY. CHECK CONNECTIONS AND REPLACE.

PROBLEM: RED LIGHT ON RELAY BOARD IS OFF

SOLUTION : THIS MEANS THAT THERE IS NO VOLTAGE TO CHARGE THE BATTERY. INSURE THERE IS AC VOLTAGE. REMOVE BLACK PLUG ON EDGE OF RELAY BOARD. THE OTHER END IS THE TRANSFORMER. MEASURE 18 VOLTS DC. ON THIS PLUG (THE INSIDE IS POSITIVE, OUTSIDE GROUND).

IF THE VOLTAGE IS ZERO, REPLACE TRANSFORMER.

IF VOLTAGE IS PRESENT THEN POSSIBLY THE TRANSFORMER HAS TOO GREAT A LOAD. RECONNECT LUG TO RELAY BRACKET. REMOVE RED BATTERY CABLE. MEASURE VOLTAGE BETWEEN RED & BLACK WIRES GOING TO BATTERY. IF 14 VOLTS, REPLACE BATTERY. IF LESS THAN 14 VOLTS, REPLACE RELAY BOARD (BATTERY NOT CHARGED).

PROBLEM: HORNS WILL NOT SOUND.

SOLUTION: LOOK AT L 25 FOR ERROR CODES. CHECK MAIN BATTERY.

TIMER COULD BE OFF OR IT MAY REQUIRE ITS INTERNAL BATTERY CHANGED.

PRESS BLUE TEST BUTTON ON RELAY BOARD. IF NO HORNS THEN THE RELAY BOARD MAYBE NEED REPLACING.

CHECK WIRE COLOR FOR CORRECT PLACEMENT. YOU MAY CONNECT THE HORN WIRES DIRECTLY TO THE BATTERY AS A TEST.

PROBLEM: HORNS SOUND DURING THE NIGHT

SOLUTION: TIMER SETTINGS HAVE CHANGED. CHECK AND CORRECT.

PROBLEM: HORNS SOUND DURING DAY REPEATEDLY (3-5 SEC DURATION)

SOLUTION: OPEN BOX AND COMPARE REFERENCE CODES FOR DEFAULT.

REFERENCE CODES

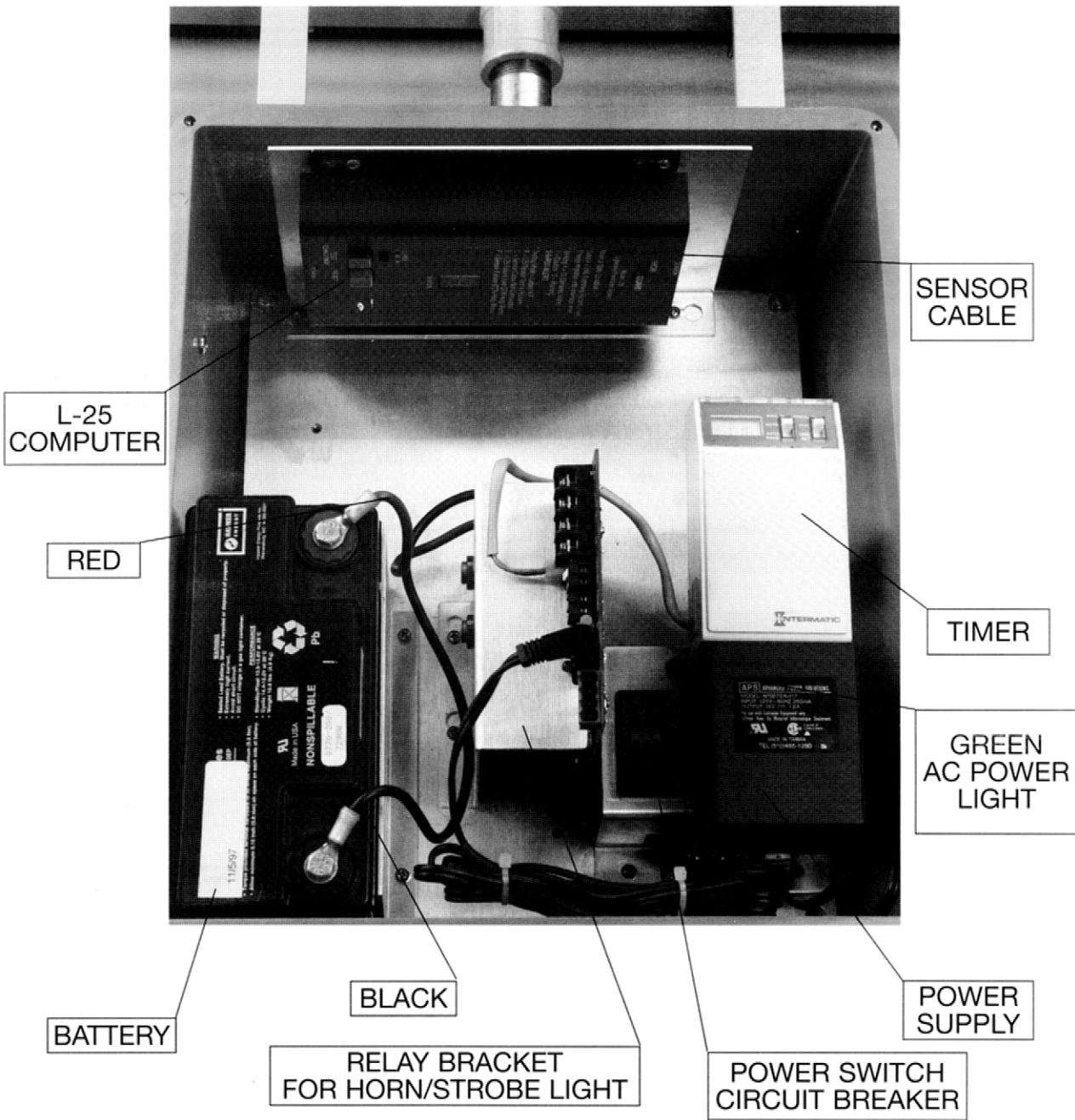
THE DISPLAY ON THE MODEL L 25 WILL ALERT YOU TO THE CURRENT STATUS. THE HORNS WILL SOUND AT A REGULAR INTERVAL WHEN THERE IS A PROBLEM.

PRESS THE RESET ON THE L-25 TO CLEAR ALL CODES:

CODE

0	=	NORMAL SAFE CONDITION
SOLID #	=	LIGHTNING HAZARD LEVEL ENERGY MIGRATION INTO COVERAGE AREA
BLINKING #	=	1 = CAUTION, 2 = WARNING , 3 - 9 RED ALERT
BLINKING H	=	HORN WILL NOT SOUND - TIMER SET TO OFF POSITION
SOLID A	=	L 25 TESTING SENSOR.
SOLID P	=	AC POWER HAS BEEN REMOVED. CHECK GREEN POWER LIGHT AND RESET POWER SWITCH
SOLID b	=	BATTERY VOLTAGE TOO LOW, CHECK AC AND REPLACE BATTERY. RED LIGHT ON RELAY BOARD SHOULD LIGHT WHEN BATTERY IS REPLACED. IF NO LIGHT, BATTERY CHARGER MAY NEED TO BE REPLACED.
SOLID C	=	SENSOR CABLE NOT CONNECTED TO L-25 OR CABLE CUT.
SOLID E	=	L -25 NEEDS TO BE REPLACED
SOLID F	=	SENSOR NEEDS CLEANING OR TO BE REPLACED. TURN TIMER TO "OFF" BEFORE CLEANING. (Refer to page 2 Sensor Cleaning) AFTER CLEANING, RESET L-25 (RED BUTTON). TURN TIMER ON AND PRESS BLACK TEST BUTTON.
SOLID L	=	TIMER HAS BEEN TURNED OFF FOR (2) DAYS. CHECK TIMER PROGRAM AND CABLE TO RELAY BOARD.

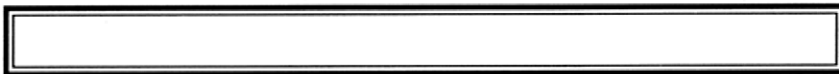
NOTE: It is recommended that user regularly check for any error codes on "STATUS" display in THORGUARDIAN enclosure.



NOTICE TO USERS

The THORGUARDIAN Lightning Prediction System is manufactured by THOR GUARD, Inc. for the express purpose of assisting the user in determining and evaluating the existence and extent of a potential for lightning discharges in the area being monitored by THOR GUARD. This product is in no way intended, nor is it represented to be, any form of protection for persons or property, whatsoever; and THOR GUARD, Inc. shall not be held liable for any damages or losses the user may experience from the effects of lightning, storm related damages, or personal injuries.

It is the user's responsibility to ensure the system is connected to a properly grounded source of power. The THORGUARDIAN will automatically notify user if it senses an operational irregularity by sounding the horns and displaying an error code on the L25, Status LED. User should identify error code and take immediate action. In the event any error codes cannot be resolved through instruction in this manual, the user should call either their Area Representative, or THOR GUARD, Inc. at the number provided below.



1193 Sawgrass Corporate Parkway, Sunrise, FL 33323
Tel: (954) 835-0900 • (888) 571-1212 • Fax: (954) 835-0808
e-mail: service@thorguard.com