

THOR GUARD
LIGHTNING PREDICTION
& WARNING SYSTEMS
TG360 PROPOSAL

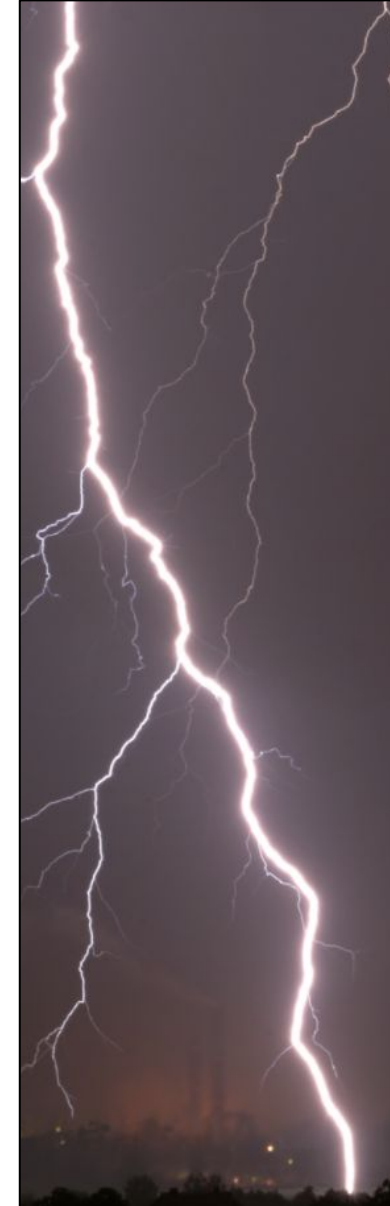


Thor Guard is designed to detect and most importantly **PREDICT** lightning by measuring the static electricity in the atmosphere and monitoring how much energy is building and changing **BEFORE** lightning occurs. All other lightning systems or methods can only detect lightning and warn you **AFTER** lightning has struck nearby.

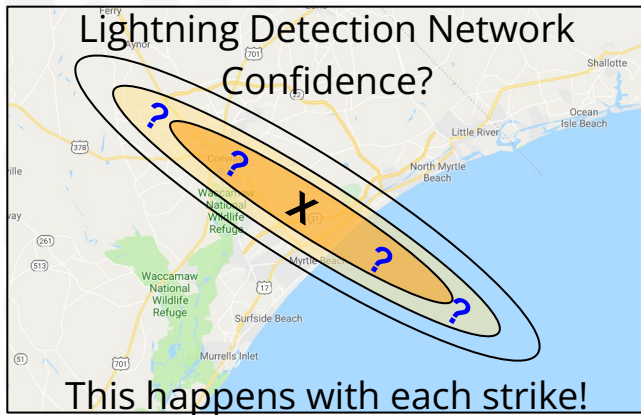
Lightning detection systems and their networks leave you vulnerable to late warning of first strikes and waiting 30 minutes after the last strike. *Since every thunderstorm is unique*, only a Thor Guard Lightning Prediction System can alert decision makers to danger before it occurs.

You can't control the lightning, but you can control how **PROACTIVE** you are when everyone's safety is in your hands. Don't be reactive like a detection system because...

EVERY THUNDERSTORM HAS A FIRST STRIKE!



DETECTION DANGERS



Lightning Detection Networks require multiple sensors reporting data as fast as possible to servers not at your location to triangulate the data, *re-sell the data* and then tell you where the lightning was AFTER it has already struck.

But just like cellular phone calls being dropped or GPS showing you in the wrong location, detection networks use a confidence ellipse (left) that estimates the location of a lightning strike.

This means the network thinks that lightning struck in that area, but isn't 100% sure, so the center of that huge area is determined to be the location of the strike. What if it's wrong and the strike wasn't 1 mile away, but was really at one of the question marks 5 to 10 miles away or more?! Then you are stopping your outdoor activities based on a guess.

Lastly remember that lightning detection companies require lightning to tell you when it is dangerous outside! Basically they tell you it is dangerous outside AFTER it has already become obviously not safe to everyone! Why would you pay money for that!?



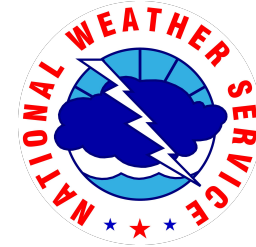
Study - NWS Texas - Summer 2020

The **FIRST** strike hit the ground in 42% of thunderstorms

Meaning No Lead Time from In Cloud Lightning beforehand in 4/10 storms

OVERALL RESULT is an median warning time of 1 minute and 8 seconds...

IF your lightning detection system can see In Cloud lightning before it hits the ground



Study - NOAA/NESDIS/Univ. of MD - Spring 2016

Comparison of 2 different Detection Networks

One Network was found to be 59% Accurate

The Other Network was found to be 67% Accurate

OVERALL RESULT is that lightning detection networks MISS A LOT of Lightning Strikes...

Especially near the Ocean



REAL Thor Guard Customer Data - Bahamas

Prediction of the FIRST lightning strike within 10 miles in 7 out of 9 storms

-Average Warning Time of 8 minutes BEFORE those storms even made a sound!

REAL Thor Guard Customer Data - Florida

-Average Warning Time of 12.4 minutes BEFORE any lightning within 5 miles.



COMPARISON

Thor Guard Prediction System

Detection System

Predicts Lightning Strikes



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Can Detect Lightning Strikes



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Operates Without Internet Access



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Instantant Lightning Detection - No Waiting



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Lightning Prediction of ALL Forms of Lightning



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Lightning Prediction with NCAA Protocol



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Heat Index and WBGT Warnings



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Severe Storm and Tornado Prediction for your specific site. No NWS or NOAA Needed.



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Lightning Timer that creates Unnecessary Delays



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All Clear Notifications Only When Safe



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SMS/Text, Email and Mobile App Notifications



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Data Logging of Weather and Lightning Data

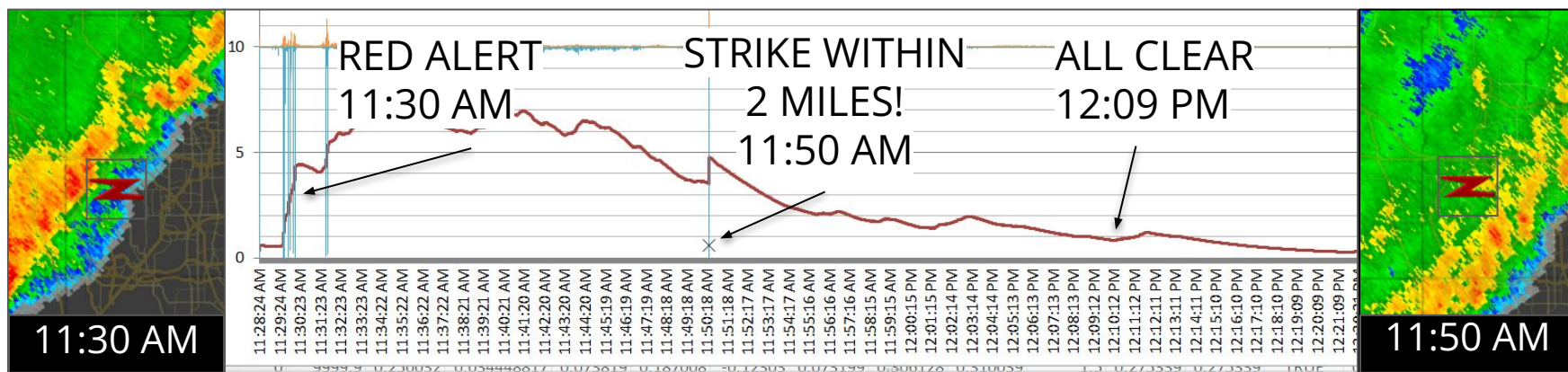


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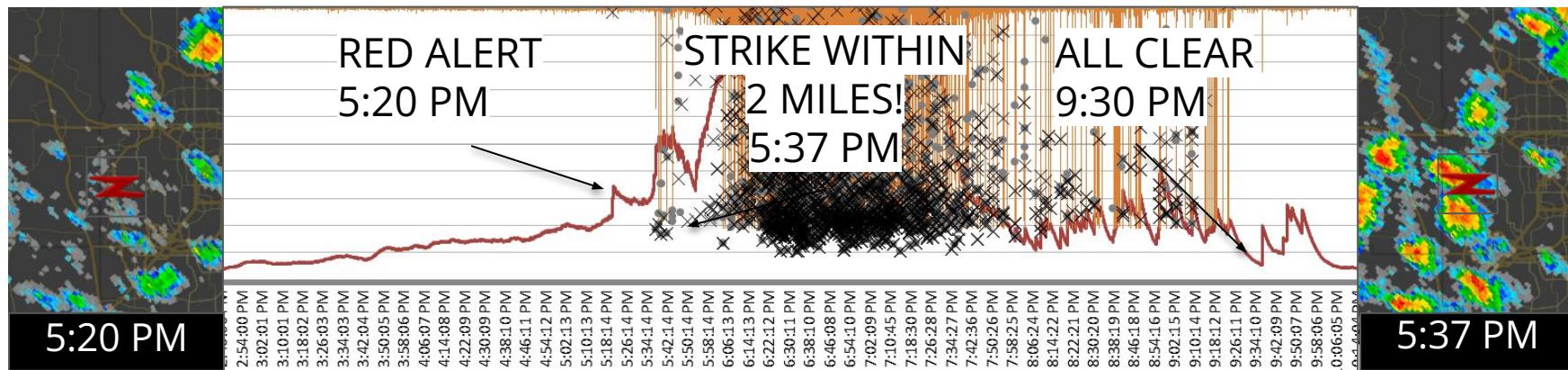
REAL WORLD TG360 LIGHTNING PREDICTION

Thor Guard TG360 in **RED ALERT** 20 MINUTES BEFORE strikes within 2 miles!



In the example above, the red line represents the Force level in the Thor Guard TG360. At 11:30 AM, the Thor Guard TG360 system at this location in Florida went into **RED ALERT**. The heavy rain with this front had not begun yet, but the nearest lightning was 15 miles or so. By 11:50 AM there had been no more lightning since 11:30 AM and then at 11:50 AM a single lightning strike hit within 2 miles (we measured it to be 0.6 miles from the system) proving Thor Guard's ability to detect and **PREDICT** the threat of lightning - in this case giving 20 MINUTES warning time!

Thor Guard TG360 in **RED ALERT** 17 MINUTES BEFORE strikes within 2 miles!

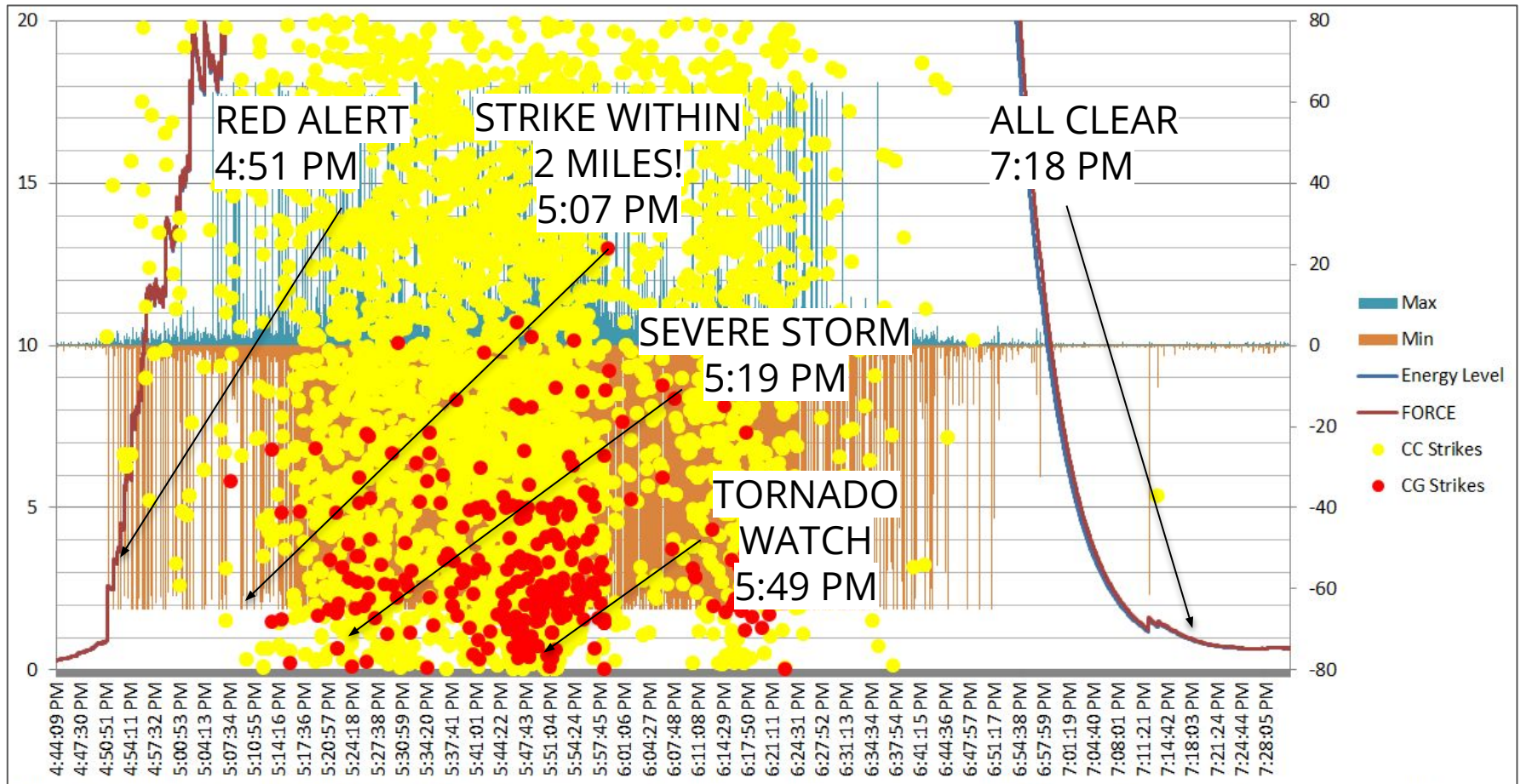


In the example above, the red line represents the Force level in the Thor Guard TG360. At 5:20 PM, the Thor Guard TG360 system at this location in Florida went into **RED ALERT**. A line of showers and storms west of the images above was marching towards the TG360 location with an outflow boundary running out ahead and creating scattered pop up showers and storms. By 5:37 PM lightning began popping up within 2 miles as the radar showed more activity developing proving Thor Guard's ability to detect and **PREDICT** the threat of lightning - in this case giving 17 MINUTES warning time!



REAL WORLD TG360 TORNADO PREDICTION



Thor Guard TG360 in **RED ALERT** 16 MINUTES BEFORE strikes within 2 miles!



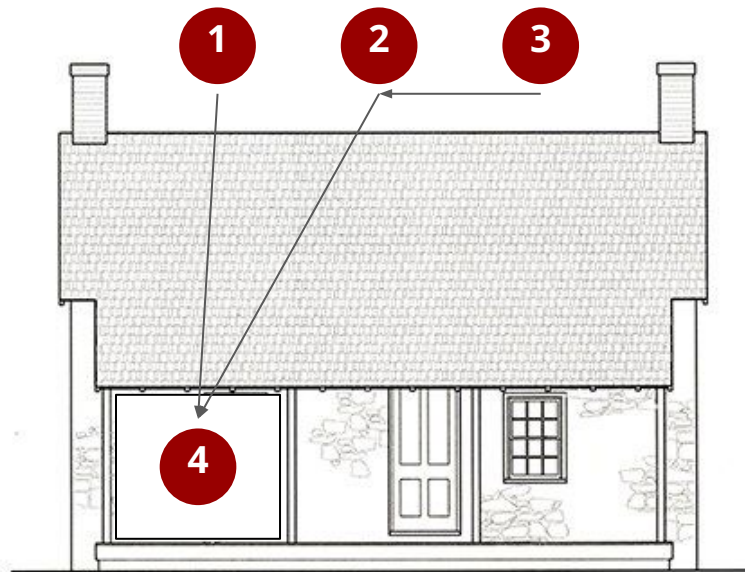
Thor Guard TG360 in **ALL CLEAR** 22 MINUTES BEFORE Detection Systems!



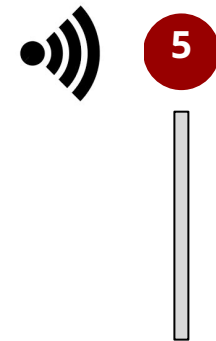
TYPICAL LIGHTNING SCENARIOS

 Warning <i>BEFORE</i> Lightning Strikes Within 2.5 Miles Of Your Area	 Warning <i>AFTER</i> Lightning Strikes Within 2.5 Miles Of Your Area	Thor Guard Lightning Prediction System	Lightning Detection System	30/30 Rule		
Area of Storms 10 miles Away Obviously Aiming for My Site.....			
Storms 10 miles Away and is Aiming for My Site.....			
Storms 6 miles Away and is Aiming for My Site.....			
Storms 2 miles Away and is Aiming for My Site.....			
First Storm Pops Up at My Site.....			
Storms Far Away Create Bolt Out of the Blue Strike Onsite.....			
Raining with Random Lightning every 30 Minutes.....			

INFORMATION PROCESS



- 1** TG360 Sensor
- 2** Base Horn Cluster
With Strobe Light and Antenna
- 3** Weather Station
- 4** Router with Laptop to
Control and Transmit Data
- 5** Remote Horn Cluster
With Strobe Light and Antenna

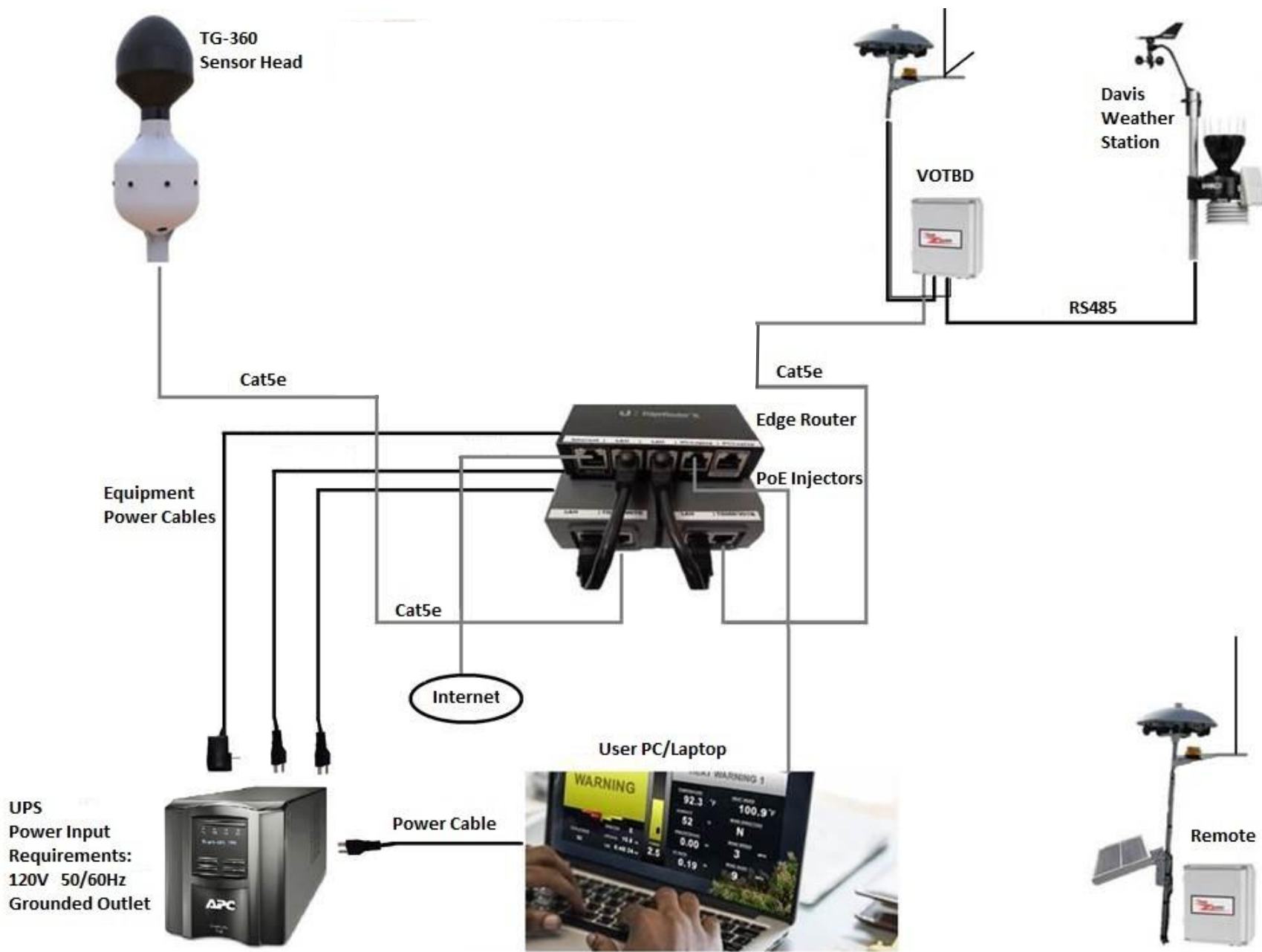


The TG360 Sensor and Weather Station are usually mounted on the roof of the desired location with the best view of the sky. If a Base Horn Cluster with optional Strobe Light and Antenna are installed, they are commonly located near the TG360 Sensor. All the equipment on the roof is connected to the computer inside the building using ethernet cables. If Remote Horn Clusters with optional Strobe Lights are installed, they are communicated with via Radio Frequency.

<http://www.thorguard.com/>



SCHEMATIC OVERVIEW

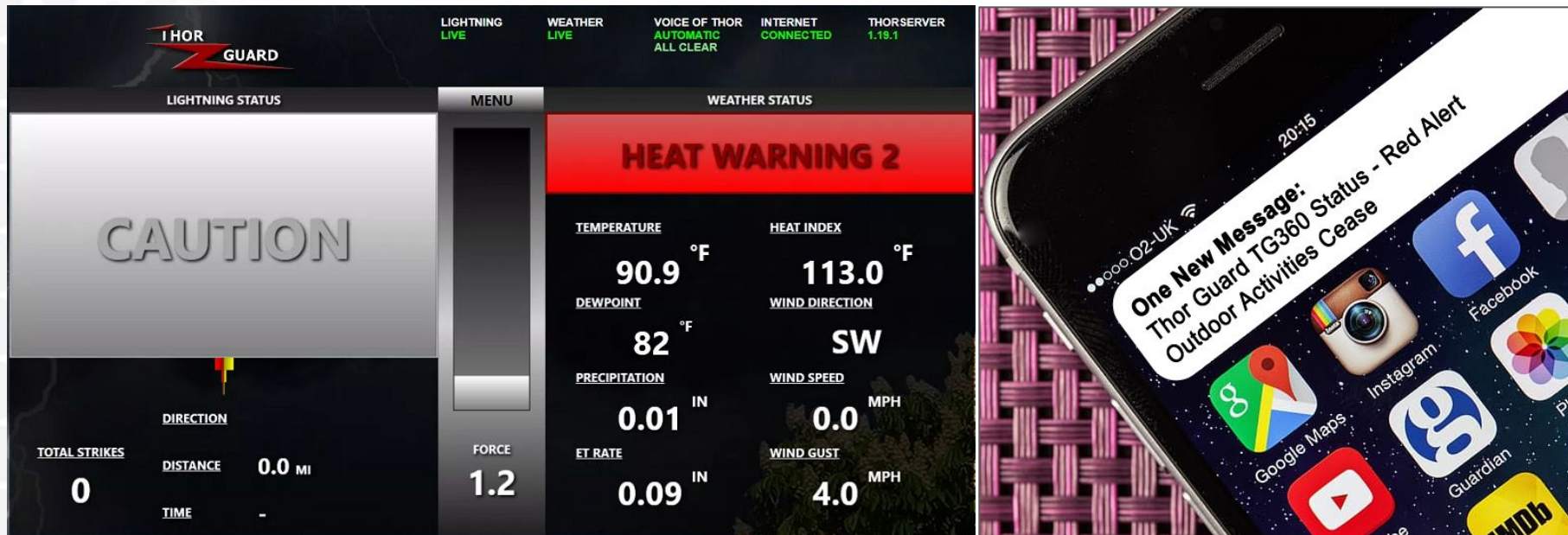




The TG360 Sensor, Weather Station and Base Horn Cluster use power over ethernet with a battery backup. It does not require the internet to operate. Remote Horn Clusters can be electric or solar powered. Usually the remote horns are installed on posts. Our horns can be heard 600-800 yard horns radially or can be aimed in 1-2 preferred directions.

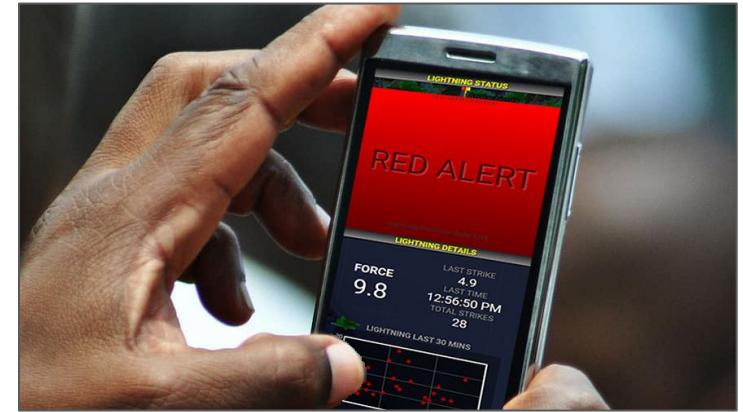
THORSERVER

ThorServer is the Control Center of the TG360. All of the Onsite Lightning Prediction and Detection data as well as all of the Onsite Weather Station Information is Displayed and Processed in this Windows Based Software. The TG360 Voice of Thor Horn and Strobe Times and Settings are Managed on ThorServer. Email and Text Messaging are Setup in ThorServer.



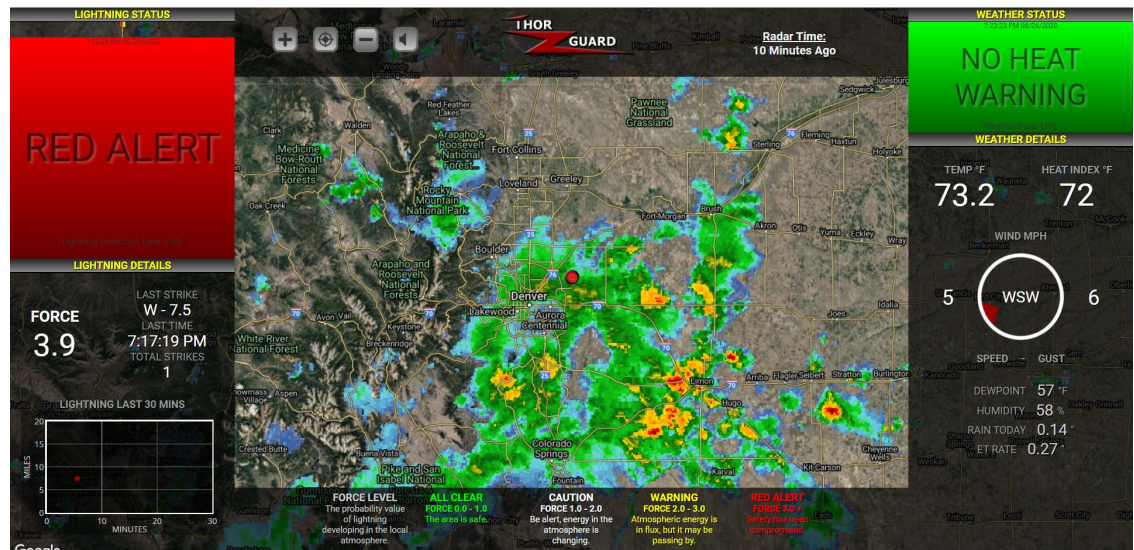
THORMOBILE & THORTV

All of the Data Shown in ThorServer is sent to our Cloud Based Servers for your Web Based ThorMobile and ThorTV website for viewing on Any Internet Connected Device. ThorAlert App to alert your phone. ThorAccess allows you to securely control your system.



HIGHLIGHTS

- Live Lightning Details
- National Radar Map with 5 Minute Updates
- Live Weather Station Details
- Hourcast
- Remote Access
- Mobile App



There is a reason why we are...
the World Leader in Lightning Prediction and Warning Systems...

1973 YEAR ESTABLISHED

2,790 CUSTOMERS WORLDWIDE

4,010 LIGHTNING SENSORS

6,869 HORN CLUSTERS

No other Lightning Company can claim that!

<http://www.thorguard.com/>