USER MANUAL

Looking Beyond

Lightning, Tornado, and Severe Storm Prediction System

Thor Guard 25.12

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License and Restrictions

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Limited Warranty

THOR GUARD warrants to User that the TG 360 Hardware will perform substantially in accordance with the published specifications for a period equal to 3 years from the original date of purchase when properly installed and used. Warranty does not apply to defects resulting from (a) improper or inadequate maintenance, (b) software, interfacing, parts or supplies not supplied by THOR GUARD and (c) unauthorized modification of the Software or the Products. If THOR GUARD receives notice of a covered defect(s) during the warranty period, THOR GUARD will replace Software that does not perform substantially in accordance with published specifications. THOR GUARD does not warrant that the operation of the Software and / or Products will be uninterrupted or error free. If THOR GUARD is unable, within a reasonable time, to repair or replace Hardware or Software to a condition warranted, User shall be entitled to a refund of the purchase price, subject to THOR GUARD.

Except as specifically stated above, the software is provided "as is" without warranty and THOR GUARD claims any implied warranty of noninfringement. Merchantability or fitness for a particular purpose, the remedies in this warranty statement are user's sole and exclusive remedies. except as indicated above, in no event will THOR GUARD be liable for loss of data or for direct, indirect, special, incidental, consequential (including loss of profit), contract, tort, or otherwise, even if such party has been advised of the possibility of such damages. In no event will THOR GUARD or any of its affiliates or third party licensor's liability under agreement, exceed the cost of the product.

THOR GUARD Lightning Data

The information recorded by the THOR GUARD lightning system is used exclusively for the purpose of providing lightning prediction at a single site location. The data, which is available by means of a power over ethernet switch and a control computer, is of a proprietary format exclusive to THOR GUARD. Use of this data for the purpose other than the connection with a THOR GUARD system, or THOR GUARD software is a violation of this Agreement.

General

This Agreement shall be deemed to have been made and executed in the State of Florida and both parties agree that any dispute arising hereunder related to this Agreement or the Product will be governed by the laws of the State of Florida exclusive of its conflicts of law principles and that the courts in the County of Broward, Fla. will have exclusive jurisdiction over all such disputes . Further the parties hereby waive trial by jury in connection with any action or suit arising under this agreement or otherwise arising from the relationship between the parties. This Agreement shall be binding upon the parties authorized successors and assignees. Neither party's waiver of any breach or failure to enforce any of the provisions of this Agreement at any time shall in any way affect, limit or waive such party's right hereafter to enforce a compel strict compliance with every other provision. No modification of this Agreement shall be effective unless in writing signed by both parties.

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Limited Warranty

THOR GUARD warrants to User that the Software will perform substantially in accordance with the published specifications for the life of the system. Warranty does not apply to defects resulting from (a) improper or inadequate maintenance, (b) software, interfacing, parts or supplies not supplied by THOR GUARD or (c) unauthorized modification of the Software or the Products. If THOR GUARD receives notice of a covered defect(s), THOR GUARD will replace Software that does not perform substantially in accordance with published specifications. THOR GUARD does not warrant that the operation of the Software and/or Products will not be interrupted or error free. EXCEPT AS SPECIFICALLY STATED ABOVE, THE SOFTWARE IS PROVIDED "AS IS" WITHOUT WARRANTY AND THOR GUARD DISCLAIMS ANY IMPLIED WARRANTY OF NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. THE REMEDIES IN THIS WARRANTY STATEMENT ARE USER'S SOLE AND EXCLUSIVE REMEDIES. EXCEPT AS INDICATED ABOVE, IN NO EVENT WILL THOR GUARD BE LIABLE FOR LOSS OF DATA OR FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, (INCLUDING LOSS PROFIT), CONTRACT, TORT, OR OTHERWISE, EVEN IF SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT WILL THOR GUARD OR ANY OF ITS AFFILIATES OR THIRD PARTY LICENSOR'S LIABILITY UNDER AGREEMENT, EXCEED THE COST OF THE PRODUCT.

Export Requirements

User may not export or re-export the data or the Software or any copy or adaptation in violation of any applicable laws or regulations. The Software and documentation have been developed entirely by THOR GUARD.

Automatic Email Notifications

THOR GUARD 360 Software cannot guarantee delivery of automatic email and text message notifications. The successful delivery of these messages are dependent upon the customer's network, email server, and other unknown factors and conditions. Thor Guard assumes no responsibility for the successful delivery of emails and text messages as configured in the Software.

General

This Agreement shall be deemed to have been made and executed in the State of Florida and both parties agree that any dispute arising hereunder related to this Agreement or the Product will be governed by the laws of the State of Florida exclusive of its conflicts of law principles and that the courts in the County of Broward, Fla. will have exclusive jurisdiction over all such disputes. FURTHER THE PARTIES HEREBY WAIVE TRIAL BY JURY IN CONNECTION WITH ANY ACTION OR SUIT ARISING UNDER THIS AGREEMENT OR OTHERWISE ARISING FROM THE RELATIONSHIP BETWEEN THE PARTIES. This Agreement shall be binding upon the parties authorized successors and assignees. Neither party's waiver of any breach or failure to enforce any of the provisions of this Agreement at any time shall in any way affect, limit, or waive such party's right hereafter to enforce or compel strict compliance with every other provision. No modification of this Agreement shall be effective unless in writing signed by both parties.

Foreword

THOR GUARD is a precision electrical instrument that requires some basic care to consistently provide the high standard of service designed into the equipment. Adhering to all maintenance and operational guidelines mandatory.

You Don't Always Have To Wait For THOR GUARD

THOR GUARD is designed to provide its user with reliable lightning prediction. If, however, you ever feel" uncomfortable “with incoming weather and THOR GUARD has yet to issue a RED ALERT, DON'T WAIT. Either sound the horns manually if included with your system, or issue a warning to cease activities in your area. When it comes to safety, the only mistake you can make is through" IN -ACTION."

Notice to Users

If your facility has a lightning policy requiring people to seek shelter whenever lightning is observed, it then is your responsibility to enforce these policies. However, a THOR GUARD alert should never be dismissed.

Limits & Exclusions

The warranties on products purchased from third–party vendors which include batteries, strobe lights, ups and solar panels are covered for a period of two years by THOR GUARD.

After two years, the warranty on these products is the responsibility and subject to the individual limitations of each manufacturer.

The transmitter, receiver, air horn assemblies, RF antennas and cables, strobe and PC board assemblies used in the VOTBD system are covered for a period of two years.

The warrantor shall not be liable for incidental or consequential damages resulting from the use of these products, or arising out of any breach of this warranty. All express and implied warranties, including the warranties of merchantability and fitness for a particular purpose are limited to the applicable warranty period set forth above.

TG 360 Software Warranty

THOR GUARD may modify the functionality and operation of the TG 360 or the software without notice. Any changes that are made to the operational software are covered under your Data management and hardware upgrade annual fee.

All shipping costs, both during and after the warranty period, to install the software will be the responsibility of the customer.

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THE THOR GUARD APPROACH

System Definitions

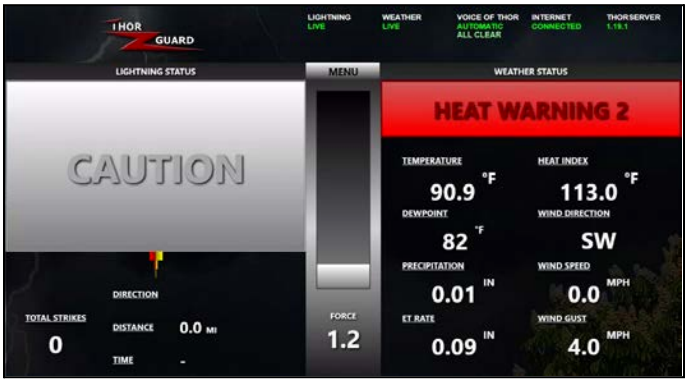
The severity of storms is determined by the total energy created by the storm itself. This energy is composed of both negative energy (lower cloud based ions) and positive energy (ground based or very high- altitude ions). The attractive structure between these ionized fields results in cloud to ground lightning if the energy levels are sufficient to create the discharge. The general purpose of lightning is to eliminate the build-up of energy and return the atmosphere to a balanced state, or a nice day. Remember, rain can be falling and the clouds look dark, but if that storm has little energy, there will be no lightning. It is also important when looking at radar images that dark red or any color return is an indication of the amount of rain being detected, not an automatic indication of lightning.

On the TG360, the energy being produced by the storm is presented by the force level. The higher the force level over 2.5, the more severe the storm. An average storm with limited lightning may only reach a force level of 4.0. A more intense storm may reach 13. A robust storm with a great deal of lightning can reach 35. A severe storm level can exceed 60. When the 360 exceeds 100, it is obvious your storm is very strong, and may have high winds and very hard rain. If you are watching the thormobile display, a clear indication of the growth of the storm can be seen by the speed of the force upward movement. The definition of “force” is the accumulation of ionized energy, or lack of this energy, in the atmosphere.

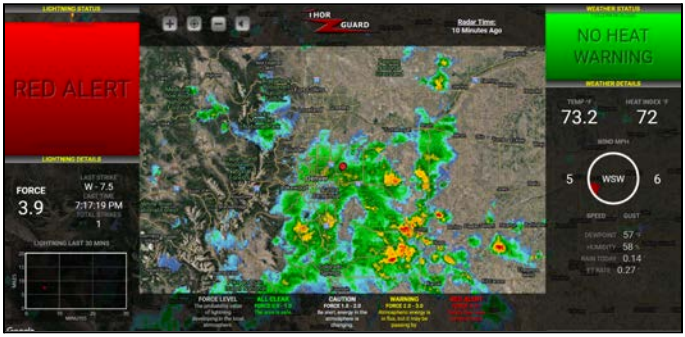
If you ever watched the movie karate kid, you probably remember the "wax on – wax off" line. In terms of the 360, energy growth is the "wax on" and the decay of energy which returns to an all clear, safe condition, is "wax off". there is no longer an all clear countdown from five or ten minutes. when the force level drops below 1.0 (adjustable), the all clear will be issued. due to the very nature of lightning not always being directly beneath a storm cloud, the red alert message will be displayed until the force level of 1.0 is achieved. While it may still be safe to be outdoors at a warning level as a storm approaches, you are not safe when a warning level is achieved after a red alert. The same applies to caution. The TG 360 clears more quickly than any previous thor guard system because we eliminated the "timer". When measuring the local electrostatic field each second 170,000 times, artificial timer controls are no longer necessary.

Lightning strikes are also detected and ranged based on the energy discharges the 360 sees, not on the technology all detection systems employ. This eliminated all false returns. to date, the red alert false alert rates experienced on all of the new 360 systems is virtually zero. The bottom line here is that when the 360 achieves a red alert, believe it. There will be lightning close-by.

System Operation



THORSERVER



THORTV

Lightning Alert Levels

These are the standard, default settings the TG360 leaves the Thor Guard Factory with.

FORCE 0.0 - 1.0
There is little to no significant energy, energy change or lightning threat present locally.

FORCE 1.0 - 2.0
The possibility of lightning is increasing due to energy changing in the local atmosphere. Make Preparations!

FORCE 2.0 - 3.0
The likelihood of lightning continues to increase as the local atmospheric energy is spiking. Take Precautions!

FORCE 3.0 + (FORCE can be below 3.0 as the storm is ending)
The probability of lightning is now high enough in the local atmosphere that lightning is predicted and/or will be detected soon. Seek shelter!
Red Alert is triggered when the Force first reaches 3.0 per storm!
1 Blast 15 secs for Red Alert - 3 Blasts 5 Secs for All Clear at 1.0

Heat Warning Levels

The user can choose whether they want the Heat Index or the Wet Bulb Globe Temperature Estimate to determine their Heat Warning alerts/notifications.

Heat Index

Heat Index < 96 F

Wet Bulb Globe Temperature

Category 1	Category 2	Category 3
WBGT < 81 F	WBGT < 85 F	WBGT < 87 F

Heat Index

Heat Index 96 - 104 F

Wet Bulb Globe Temperature

Category 1	Category 2	Category 3
WBGT 81 - 86 F	WBGT 85 - 90 F	WBGT 87 - 92 F

Heat Index

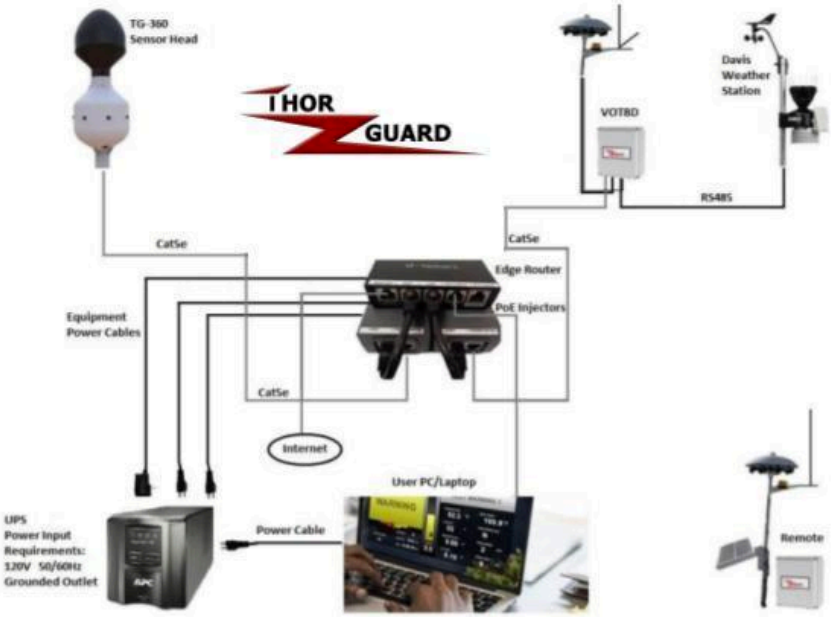
Heat Index > 104 F

Wet Bulb Globe Temperature

Category 1	Category 2	Category 3
WBGT > 86 F	WBGT > 90 F	WBGT > 92 F

THOR GUARD
TG 360 Installation Prep

Schematic Overview



FCC Rules & Regulations

FCC Rules and Regulations - Compliance Statement: THOR GUARD TG27 FM VOT SYSTEM.

The Transmitter and Receiver (components) that are used in the THOR GUARD VOT System are covered by FCC Part 95 Radio Control Device. The components are designated for use in the United States and only those locations as authorized and permitted by the FCC. There are no adjustments the user is authorized or permitted to make to alter the frequency or power of these components. The user is only permitted to change the Dip Switches for their location as assigned by THOR GUARD. Any changes or adjust-ments to the Transmitter or Receiver can cause a violation of the Rules. Any and all repairs to the Transmitter and or Receiver, which could include but not be limited to the crystal or semi-conductors, must be performed only by THOR GUARD. This equipment has been tested and found to comply with the limits of a Class A digital device, pursuant to Part 15, of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Choosing the Sensor Location

*****IF A SUITABLE LOCATION CAN NOT BE FOUND,
DO NOT INSTALL SENSOR*****

The location of the sensor will be dependent upon the desired location of the THOR GUARD console, 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. If a roof location is not possible, the sensor can be mounted on a post or pole.

NOTE: SYSTEM PERFORMANCE WILL BE GREATLY COMPROMISED UNLESS THE SENSOR IS MOUNTED WITH A CLEAR "VIEW" OF THE SURROUNDING SKY, WITH A MINIMUM ELEVATION OF 7 FEET IN RELATION TO IT'S MOUNTING OR ANY HORIZONTAL SURFACE, FOR EXAMPLE, PARAPET WALL OR RIDGE OF A PITCHED ROOF. ADJACENT TALL BUILDINGS AND STRUCTURES COULD GREATLY AFFECT SYSTEM FUNCTIONALITY.

Sensor Location Guidelines

- Never under overhanging trees and high power lines.
- ONLY use recommended cable lengths.
- At least 5 feet from lightning air terminals.
- At least 15 feet from (and higher than) air conditioning units, vents, fans, etc.
- At least 15 feet from other antennas; e.g. TV, VHF, etc.
- Outside a 30-degree angle from building structures or trees. (These structures ALL absorb energy from “storms”).
- As far as possible from electric chargers or transformers and other large/tall power lines.

- A metal roof is not advisable, but if necessary, isolate the sensor tripod from the roof and elevate the sensor as advised.

- As far away as possible from flags/flagpoles that are close to the same height as the sensor.

- **MAKE SURE THAT ANY MAST OR TRIPOD USED TO MOUNT THE SENSOR IS <u>NOT</u> GROUNDED.**

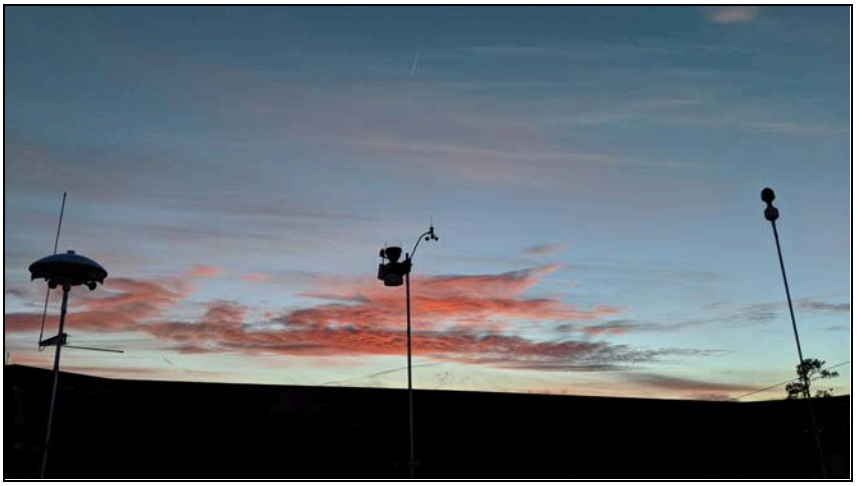
If you have any questions about your location, contact THOR GUARD prior to the installation of the sensor.

THOR GUARD
TG 360 Installation

TG360 Installation Overview

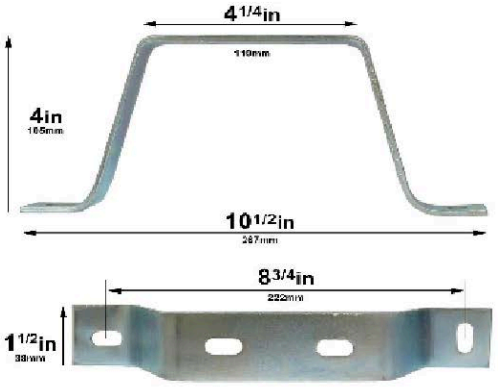
The TG360 Sensor should be installed in a location that has the best view of the sky. It does not have to be on the tallest object around, it just needs to see an accurate depiction of the sky to represent the area the customer intends to provide warning for.

The TG360 can be secured using a 3' Heavy Duty Tripod that can accommodate a 1" rigid pipe can also be used (below).



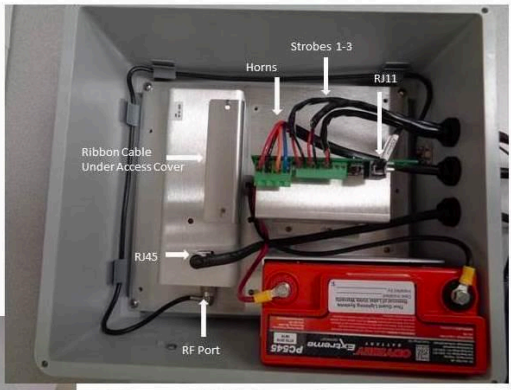
All components of the system: **TG360, Weather station**, and **Enclosures,** that utilize 1" IMC pipe, can also be mounted using 4" wall mount brackets: Spec is shown below. When securing to walls or posts, Base or Remote boxes can use the optional pre-drilled mounting holes, which can accommodate either, 5/16" x 1-3/8" U-Bolt or material appropriate screw hardware.

Thickness: 5/32" (4mm)



Base Enclosure Overview

360-VOTBD
Electrical Terminations



There are (2) I/O Assemblies.
The VOTBD uses an I/O-BAS (POE) Assy.

POE Assy I/Os:
Horn
Strobe (up to 3)
Weather Station (RJ11)
Ribbon cable

Transmitter I/Os:
RJ45
Ribbon Cable
RF Port

CAUTION

DO NOT CONNECT BATTERY UNTIL ALL CONNECTIONS ARE MADE

(Refer to Router, POE Injector & Laptop/PC Installation)
Ensure all connections are hand tight.

VOTBD Location Guidelines

Total VOTBD cable run length must not exceed 300ft

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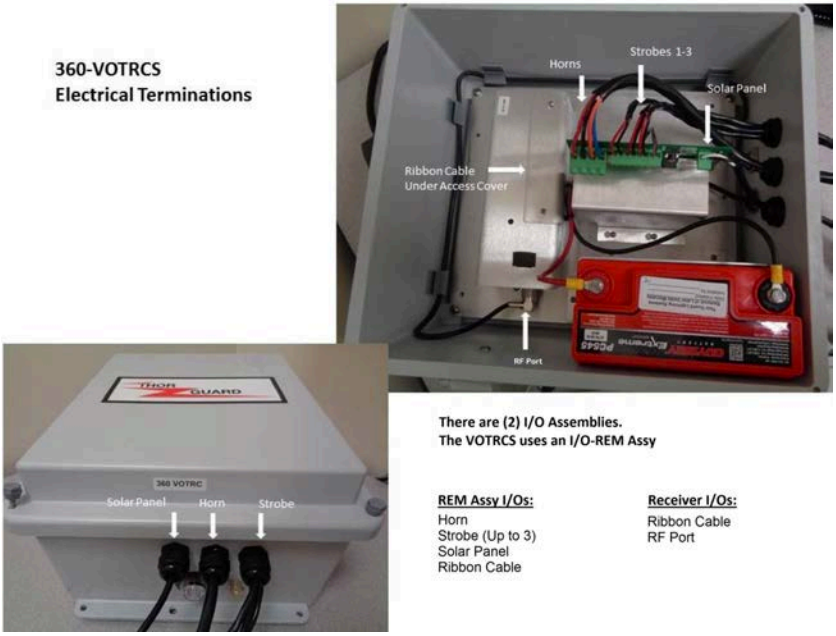
Remote Enclosure Overview



CAUTION

DO NOT CONNECT BATTERY UNTIL ALL CONNECTIONS ARE MADE

(Refer to Router, POE Injector & Laptop/PC Installation)
Ensure all connections are hand tight.

Voice Of Thor Remote Horn And Strobe Operation

Nearly every remote Voice of Thor system is solar charged and battery powered. After many years of successful operation worldwide, we have learned a great deal about the capabilities and shortcomings of solar operations. Safety and reliability is first and foremost on our minds, and we strive to improve everywhere in our product line. The following changes have been made to the voice of thor operation in order to protect the battery and enhance operation during days of heavy overcast conditions.

Your Voice of Thor can run many days without sunny conditions. Overcast conditions do not keep the battery from being charged. However, when such a condition arises, THOR GUARD wants to be certain that the battery recharges, and the receiver will automatically wake up and receive messages from the base transmitter. If the battery was below 11 volts, there would be enough charge left over to receive a Red Alert or All Clear order but not enough voltage to disable a strobe or blow a horn. In the past, a remote Voice of Thor fails to turn a strobe off because the draw on the low battery was too much for the receiver to react and disable the strobe.

With smart processing, we have now programmed the remote Voice of Thor to monitor the battery's charge and turn the receiver off if the voltage drops below 11 volts dc. This will protect the battery and provide better charging for the battery without draw from the receiver or operating strobe. When the battery recovers to 12.2 volts, the receiver will power up and the remote will again become fully functional. With our advanced charging methodologies, this recharge time will be quite short if sun is present and the battery is in good overall condition.

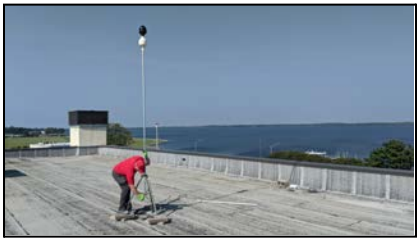
UPS - Uninterrupted Power Supply Requirement

Ensure that the UPS is connected to a verified, well-grounded 120V, 60Hz outlet. **ONLY** Thor Guard equipment should be connected to UPS Battery Backup and Line Conditioner.

TG360 Sensor Cable Install Order

1. Power up Router and Injectors
2. Connect Router to Internet using standard unshielded CAT5 cable
3. Connect TG360 laptop to router using standard unshielded CAT5 cable
4. Install TG360 Sensor outside on pipe with the connection of the TG360 Sensor CAT5e plugs inside pipe (more details next)
5. Connect other end of CAT5e cable to POE injector input inside to the open port labeled TG360/VOTB while holding/touching injector/router
6. Launch ThorServer on TG360 Laptop
7. Verify Green All Clear screen

TG360 Installation Procedure



Feed the ethernet cable from the TG360 Sensor Head through the 7-10 foot tall, 1 inch diameter pipe, then place the TG360 Sensor Head on top of the pipe and secure it. The N on the top of the white enclosure has a black line on the bottom side of the white enclosure, make sure they are facing NORTH and then secure the pipe to its mounting equipment (tripod/antenna mount/wall mount/etc.)

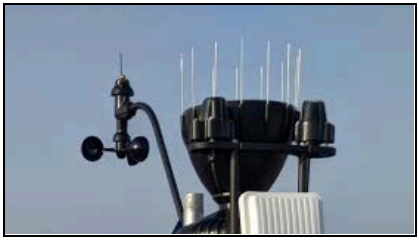
Run the Ethernet cable from the TG360 all the way down inside to the location chosen for the Router. In a lot of cases, this location is in a server room, but it depends on what the installer and customer decide on. Plug the TG360 cable into one of the Power Injectors.

Weather Station Installation Procedure

Take the Davis Weather Station out of the box carefully. Once you are ready to put the weather station together, make sure the arm of the anemometer is like the picture to the left. Use the supplied screw to tighten the arm to bracket. Use the supplied tiny allen wrench to attach the wind cups. The cups and wind vane should be parallel to the ground upon final install.

Turn the Weather Station Rain Gauge. The big black portion that says Davis twists and unlocks to open the rain gauge.

With the Rain Gauge Opened, cut the zip tie holding the rain gauge bucket, so that it is free to tip (that is how it measures rainfall). Once the yellow zip tie is removed, place the rain gauge top back on, twist and lock it back into place.



Insert the supplied Bird Spikes into the holes surrounding the top of the Rain Gauge with just a few taps of the hammer.

Mount the Weather Station to the pipe using the supplied U Bolts. The U Bolts overlap around the pipe in between the grooves between the wind side and the rest of the weather station side. For the best appearance, the wind side U Bolt is just above the weather station side's U Bolt. Tighten with washer and bolts, again supplied by Davis in a pouch.

Once the Weather Station is mounted, it should look like this...with the wind vane pointing due North.

You can connect all the cables on the ground or once the Weather Station is mounted. Either way, first unplug the Temp/Hum plug and pull it out of the box. It is the largest cable and getting it out of the way makes it easier to insert the Console cable that runs to the VOTBD and the Wind cable. Once the Console and Wind cable are in and connected, then re-insert the Temp/Hum cable and make sure all plugs are in their corresponding ports. Finally push the foam piece to plug the hole where the cables come in to prevent moisture and insects. The cover for the weather station control panel is a lift and slide piece when you are opening and closing it.

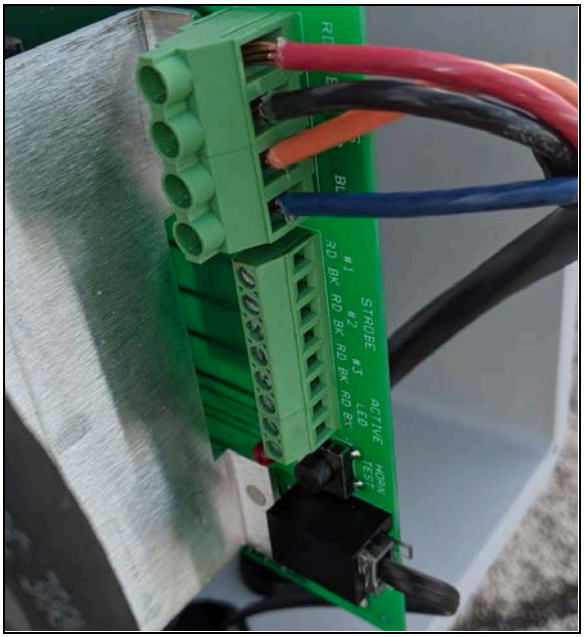
Voice of Thor Base Driver Install Order

1. Connect VOTBD Cat5e cable to POE input of Injector
2. Connect Weather station RJ11 plug into I/O board of VOTBD
3. Connect battery to VOTBD enclosure
4. Make sure to turn on Transmitter
5. Verify weather station data on ThorServer

Voice of Thor Base Driver Installation Procedure

Similar to previous Thor Guard VOTBD installations, the TG360 VOTBD requires a battery in the same spot of the enclosure. The transmitter is in a similar location and simply has an ethernet jack for the cable coming from the power injector.

The horns and strobes go into similar ports/slots secured by screws on the Relay Bracket. For single strobe installations, the strobe goes into #3 to be triggered on Red Alert only. At the bottom of the Relay Bracket is the phone jack where the Weather Station plugs into.



Since the Relay Bracket for the VOTBD and VOTRC are similar, here is a list of what should be plugged in where (this depends on the desired equipment you and the customer determine)...

Horn Cables at the Top
Red, Black, Orange, then Blue

Strobe Cables
#1 for Caution / Heat Warning 1 strobes
#2 for Warning / Heat Warning 2 strobes
#3 for Red Alert strobes

Active LED Strobe
For light on bottom of enclosure - mainly remote use only for testing signal

Test Horn Button

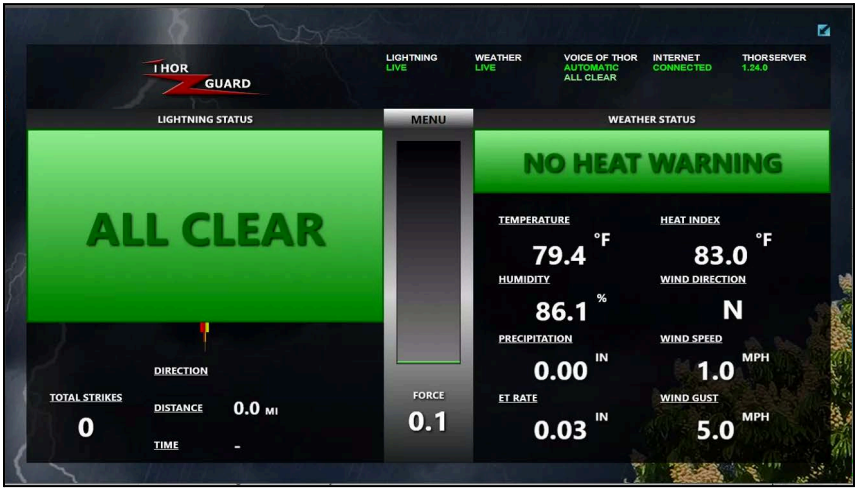
Davis Weather Station Port

Run the Ethernet cable from the VOTBD all the way down inside to the location chosen for the EdgeRouter. Plug the VOTBD cable into one of the Power Injectors.

Once the work on the roof is done and both the VOT and the TG360 are connected to the Power Injectors, plug the Internet into the port label Internet, which is the farthest open port on the left. The customer usually supplies this ethernet cable running back to their internet switch, router or modem.

Using the supplied ethernet cable with the supplied laptop, connect the ethernet cable and the laptop to get all the information flowing to the ThorServer software and eventually onto the web for the ThorMobile/ThorTV site. The laptop can be used for showing the customer system operations, but most of the time this laptop is to be closed with customers relying on the ThorMobile / ThorTV site for viewing.

THOR GUARD
THORSERVER SOFTWARE



The ThorServer Software is a Windows based service software that handles and processes the TG360 Data coming down from the sensor on the roof through the provided Edgerouter into the provided laptop.

Quick Status Bar

At the top of the ThorServer is the Quick Status Bar where you can rapidly check on the state of the following parts of your TG360 System.

LIGHTNING - **LIVE** or **OLD**

WEATHER STATION - **LIVE** or **OLD**

VOICE OF THOR - **AUTOMATIC** or **MANUAL**

VOICE OF THOR - Various States of your Voice of THOR

ALL CLEAR **CAUTION**
WARNING **RED ALERT**
SHOTGUN **GENS** **TORNADO**
HEAT WARNING 1 **HEAT WARNING 2**

INTERNET - **CONNECTED** or **NOT CONNECTED**

THORSERVER - Version Number

Lightning Status

Below the Quick Status Bar are the Menu, Lightning Status Box and Weather Status Box.

Left side of ThorServer Updates Every Second Displaying:

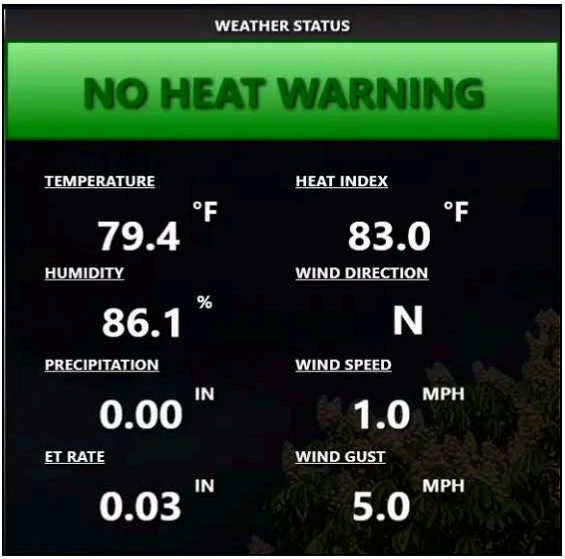
- Alert Status of the TG360

- Total Lightning Strikes

- Latest Lightning Direction
- Latest Lightning Distance
- Latest Lightning Time

- Force Bar & Force Value

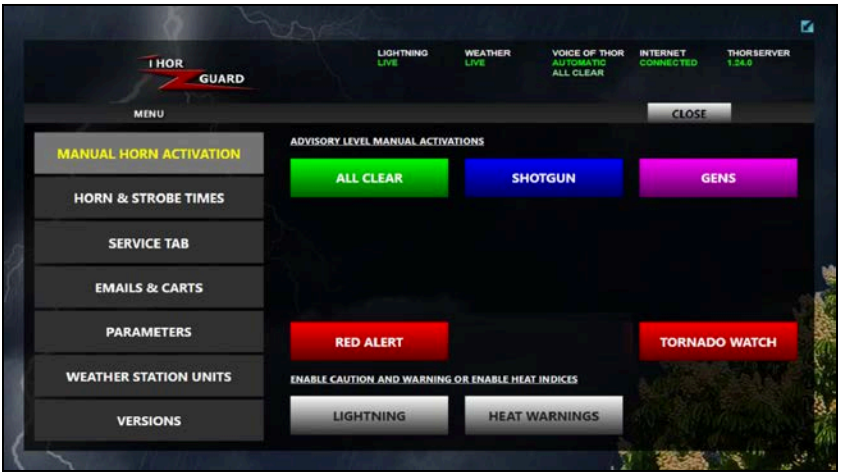
Weather Status



Right side of ThorServer Updates Every 2.5 Seconds Displaying:

- Alert Status of the Weather Station
- Current Temperature & Heat Index
- Current Dewpoint & Humidity
- Current Wind Direction, Speed & Gust
- Daily Precipitation & ET Rate

Manual Horn Activation



ADVISORY LEVEL MANUAL ACTIVATIONS

ALL CLEAR - 3 horn blasts 5 seconds each time, strobes off

*CAUTION - 1 horn blast 4 seconds, strobe 1 on

***WARNING** - 2 horn blasts 4 seconds each time, strobe 2 on

RED ALERT - 1 horn blast 15 seconds, strobe 3 on

SHOTGUN - 3 horn blasts 5 seconds each time

GENS - horn blasts on/off 1 second oscillating for 1 minute

TORNADO - horn blasts on/off 1 second oscillating for 1 minute

*HEAT WARNING 1 - 1 horn blast 4 seconds, strobe 1 on

***HEAT WARNING 2** - 2 horn blasts 4 seconds each time, strobe 2 on

ENABLE CAUTION AND WARNING OR ENABLE HEAT INDICES

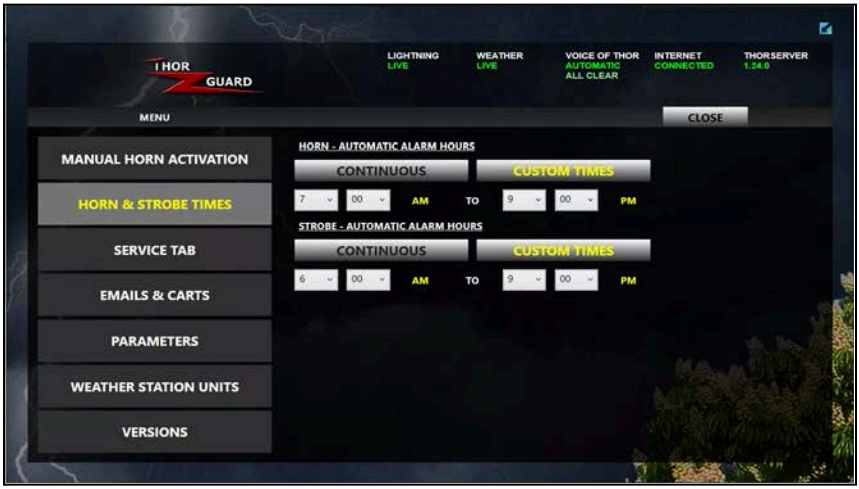
LIGHTNING

*If this is enabled and your TG360 reaches Caution and/or Warning, your horns and extra strobe lights will make an audible and visual alert. You must have multiple strobe lights installed at each horn location to see the strobe lights flash for Caution and Warning.

HEAT WARNINGS

*If this is enabled and your TG360 reaches Heat Warning 1 and/or Heat Warning 2, your horns and extra strobe lights will make an audible and visual alert. You must have multiple strobe lights installed at each horn location to see the strobe lights flash for Heat Warning 1 and Heat Warning 2.

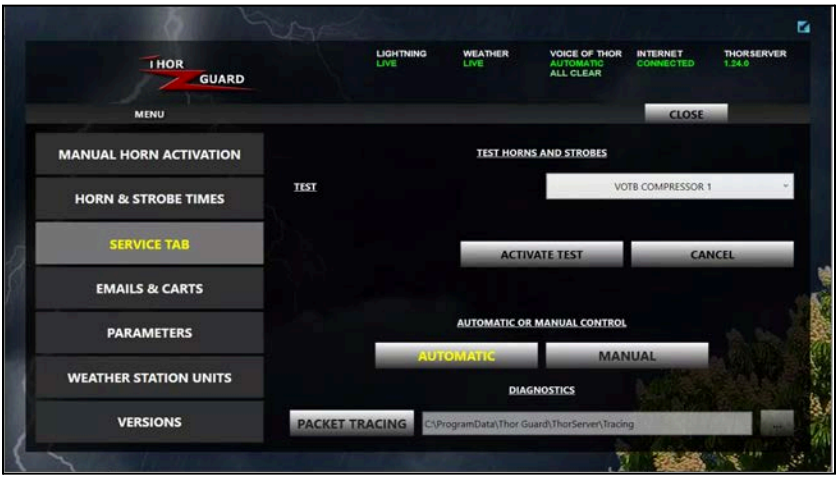
Horn & Strobe Times



CONTINUOUS
Your TG360 system can provide audible and visual alerts at any time of day or night by enabling this mode.

CUSTOM TIMES
Use your own custom horn and strobe hours by enabling this mode and choosing the hours you prefer the horns and strobes to be available for activation.

Service Tab



TEST HORNS AND STROBES

This tab is for Certified Personnel such as Territory Managers to test the various base/remote horn/strobe procedures.

ACTIVATE TEST

This will activate the chosen test in the drop down menu above.

CANCEL

This will end the test in progress.

AUTOMATIC OR MANUAL CONTROL

This section of the Voice of Thor Settings Menu is for Certified Personnel such as Territory Managers to change the control of the system between Automatic or Manual mode.

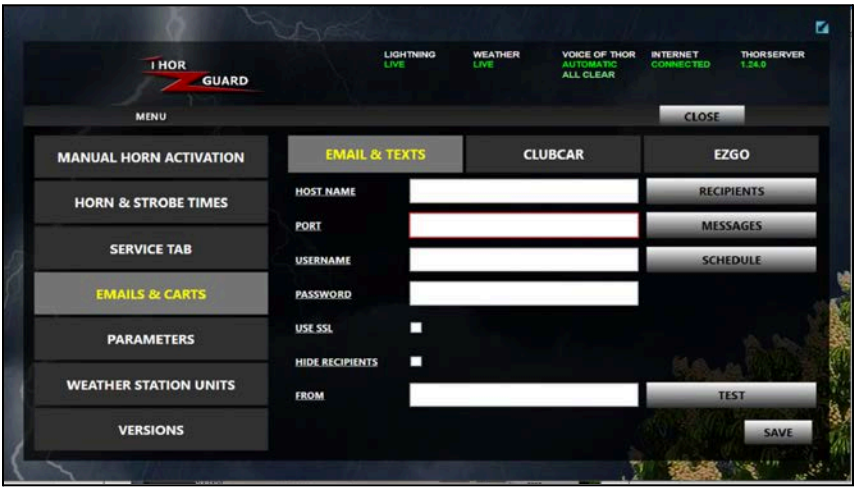
AUTOMATIC

Horns and Strobes will automatically be triggered by your TG360 system.

MANUAL

Horns and Strobes will not be triggered by your TG360 automatically - but rather by the use of the MANUAL HORN ACTIVATION (see earlier section). Automatic mode is recommended. Only use this mode if you are willing to take responsibility for the audible and visual alerts of your TG360 system.

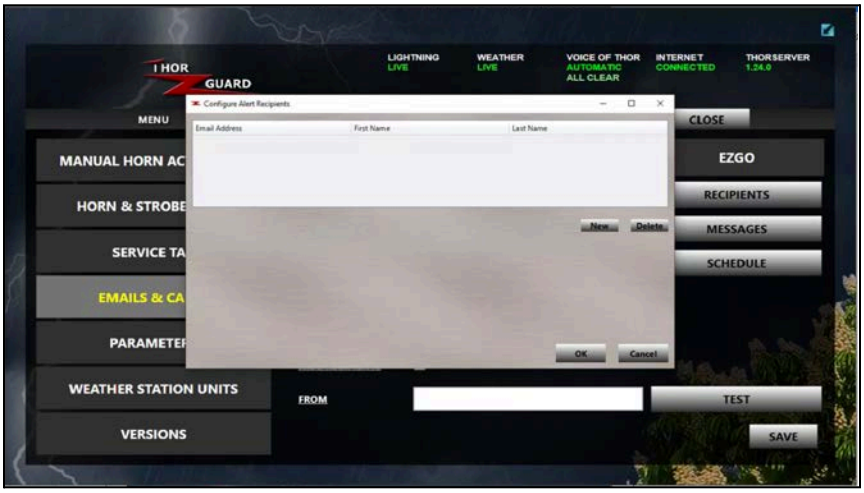
Emails & Carts Tab



EMAIL AND TEXTS
IT department assistance may be required for any or all of the Email/Text setup.

Fill out the HOST NAME, PORT, USERNAME and PASSWORD of the mail server intended to be used. Depending on the mail server, enabling the USE SSL box may be necessary. If the number of email and text numbers is significant, check the HIDE RECIPIENTS box to hide the list of recipients. The FROM box must be an email address in form, but an actual email address is not necessarily required.

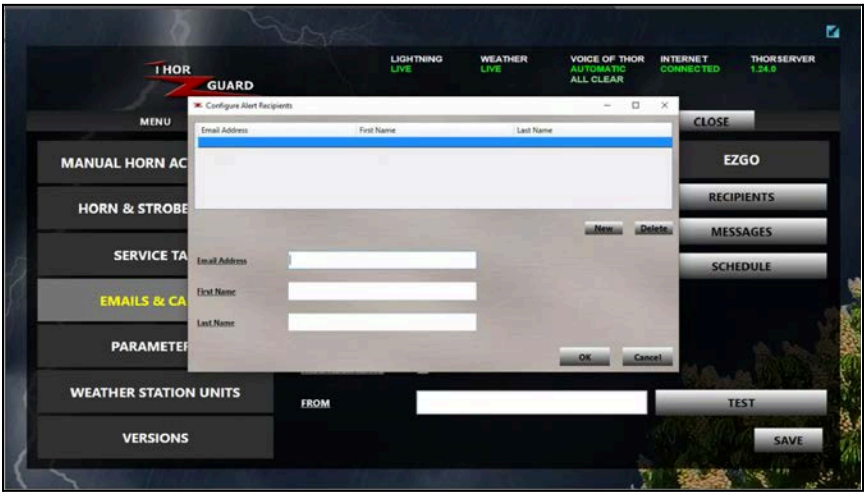
Emails & Carts Tab



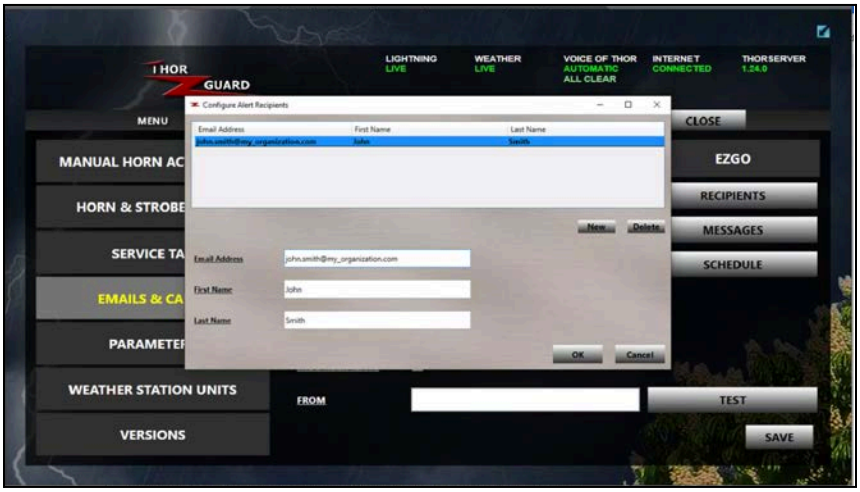
RECIPIENTS

Click on the RECIPIENTS button, in the top right, to open the Configure Alert Recipients window.

Once that window is open, click on the NEW button to create a new blank record to edit.



Emails & Carts Tab



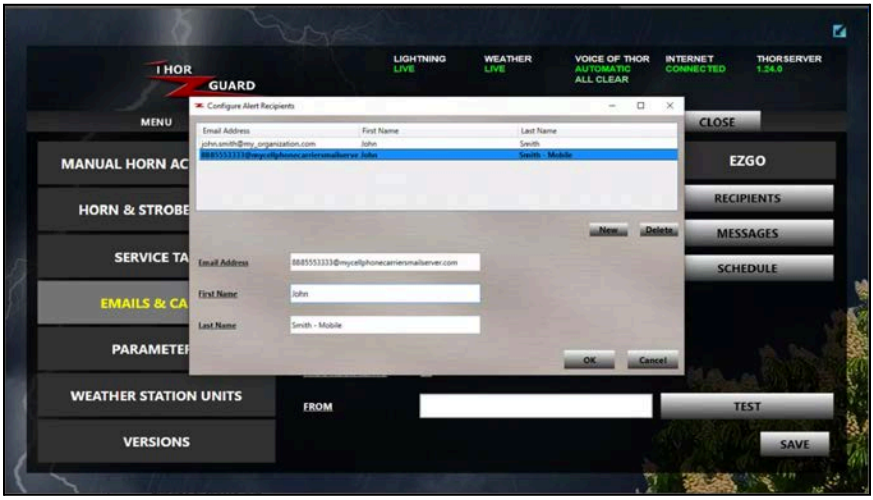
ADDING EMAIL ADDRESSES

With a new blank record created, fill in the information for that record in the EMAIL ADDRESS, FIRST NAME and LAST NAME in the area to the lower left. When done with that record (it should be populated in the columns/rows up above) and another new blank record needs to be created, simply click the NEW button again and another new blank record will be created. Fill out that information for that new blank record. Repeat this process until all records are created and filled out, then click OK.

To edit a record, simply click on the record in question above to highlight it and then edit the information of that highlighted record.

To delete a record, simply click on the record in question above to highlight it and then click the DELETE button.

Emails & Carts Tab



ADDING TEXT MESSAGING ADDRESSES

To add mobile numbers for text messaging, enter the numbers in the following format…

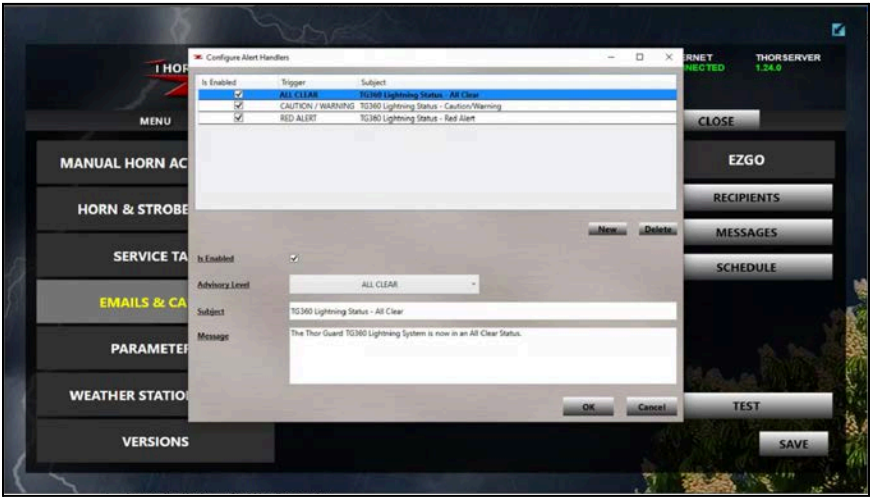
MobileNumber@MyMobileProvidersMailServerFormat.com

An example for Verizon would be 5553338888@vtext.com

Mobile carrier	SMS gateway domain	MMS gateway domain
Alltel[8]	sms.alltelwireless.com	mms.alltelwireless.com
AT&T[9]	txt.att.net	mms.att.net
Boost Mobile[8]	sms.myboostmobile.com	myboostmobile.com
Cricket Wireless	mms.cricketwireless.net	mms.cricketwireless.net
FirstNet	txt.att.net	mms.att.net
Google Fi[10]		msg.fi.google.com
MetroPCS	mymetropcs.com	mymetropcs.com
Republic Wireless[11]	text.republicwireless.com	
Sprint[8]	messaging.sprintpcs.com	pm.sprint.com
T-Mobile[8]	tmomail.net	tmomail.net
U.S. Cellular[8]	email.uscc.net	mms.uscc.net
Verizon Wireless[12]	vtext.com	vzwpix.com
Virgin Mobile[8]	vmobl.com	vmpix.com

This information is as of 2020, but it may be necessary to google / search for mobile phone mail server addresses to find more current information. When done adding Email Addresses and Text Messaging Addresses, click OK to go back to the Emails & Carts Tab.

Emails & Carts Tab

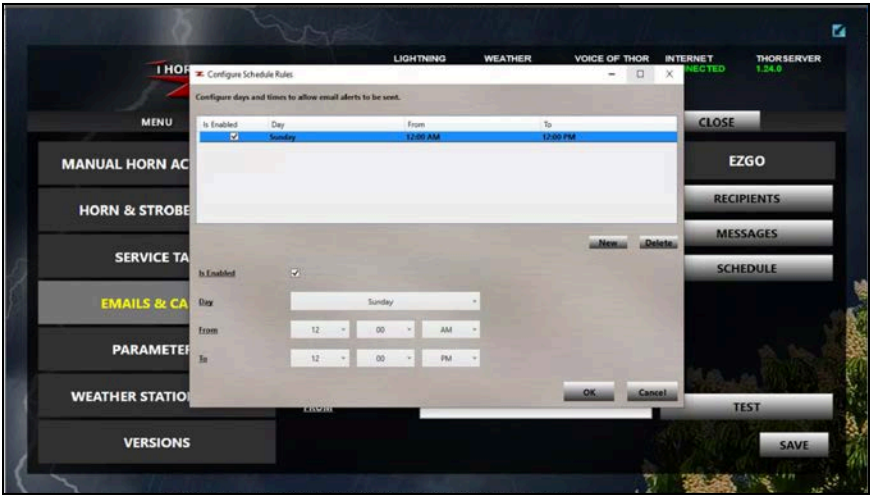


EMAIL/TEXT MESSAGE CONTENT

To review or modify the actual alert messages being sent to your recipients, click on the MESSAGES button to open the Configure Alert Handlers window.

In this window, modification can be done to the SUBJECT and/or the MESSAGE for the different trigger/alert levels being triggered and sent to the recipients. This is also where different trigger/alert levels can be ENABLED or DISABLED. Make sure to only have 1 Trigger that is Enabled for each Advisory Level. Different options will be available and added over time, so check the recipients, messages and schedule periodically.

Emails & Carts Tab



SCHEDULING EMAILS/TEXTS

To set certain time allowances of when emails/texts can be sent regarding this TG360 system, click on the SCHEDULE button to open the Configure Schedule Rules window.

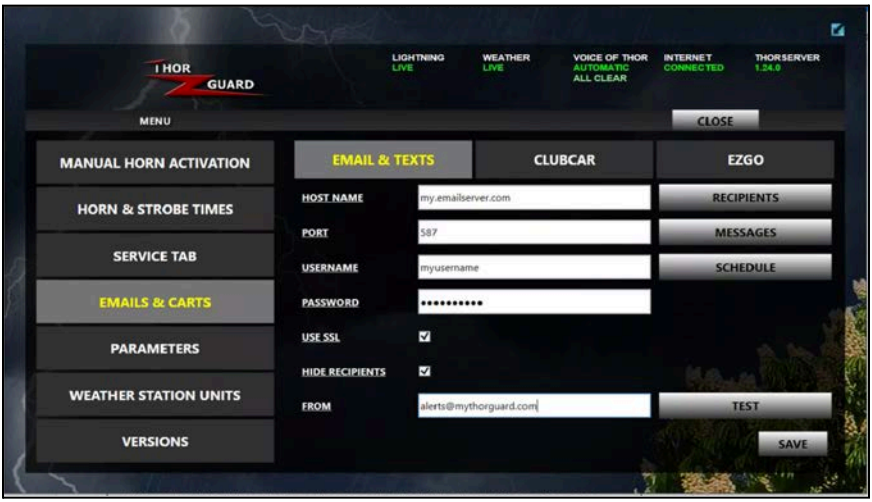
In this window, start by clicking the NEW button and configuring the highlighted row to be set for a certain day and between a set of certain hours. Repeat this process to add more day/time allowances. Make sure no days and/or times overlap to avoid potential logic conflicts in the software.

To edit an already created day or time allowance, simply click on the allowance above to highlight it and then edit the information down associated with that allowance in the lower left.

To delete an already created day or time allowance, simply click on the allowance above to highlight it and then click DELETE to erase that time allowance.

Make sure to double check all of the days, times and that they are ENABLED. When done, click OK.

Emails & Carts Tab

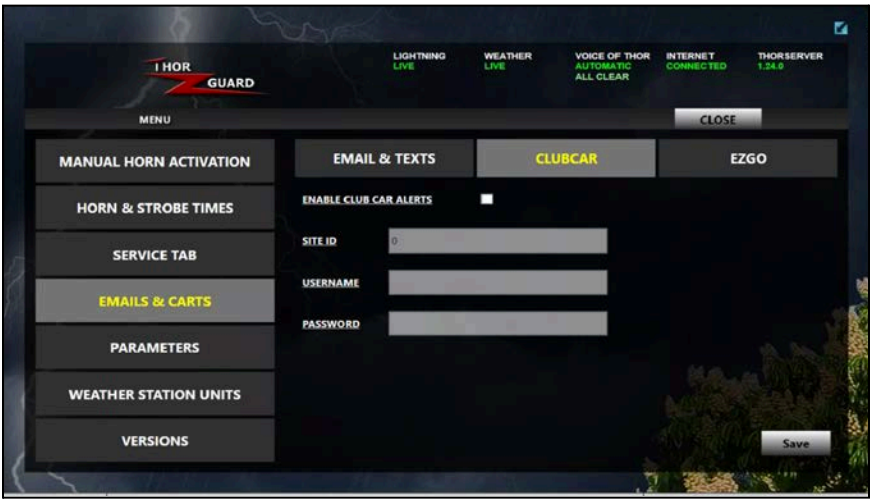


SENDING A TEST EMAIL/TEXT

To test the email setup and make sure everything was set up properly, verify that all of the email server information is correct. You may need your IT staff to assist.

***Remember that each time a test is run, the password will need to be entered. For security purposes, ThorServer does not retain the password for display. It only uses the password saved when events are triggered, whether automatic lightning alerts or manual tests.

Emails & Carts Tab

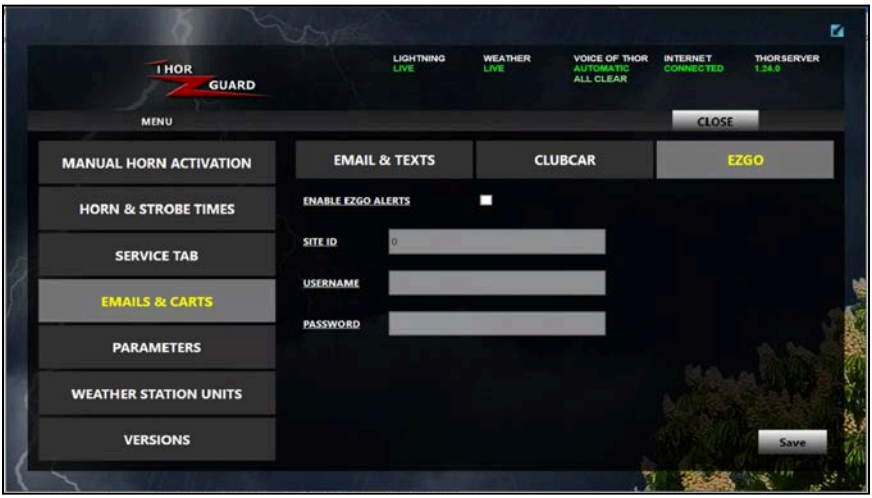


CLUBCAR

If you have Clubcar golf carts at your facility, then please contact Thor Guard Software Support Team members to assist with the Site ID, Username and Password.

support@thorguard.com

Emails & Carts Tab

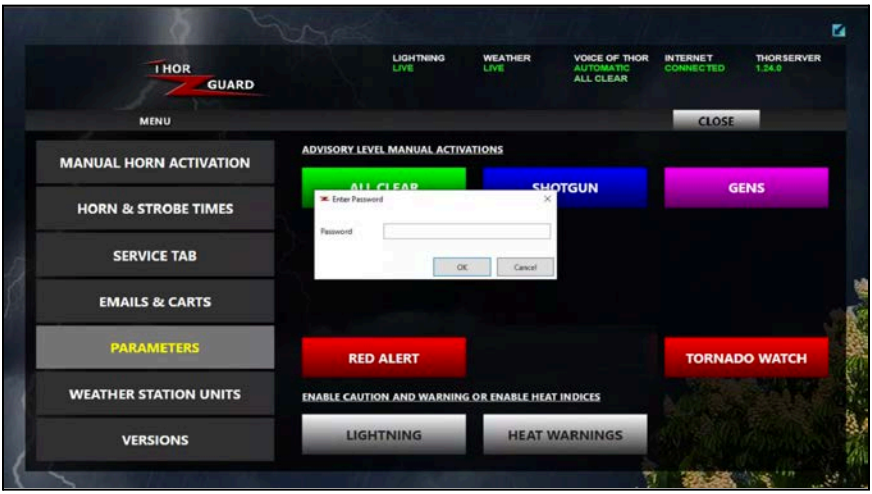


EZGO

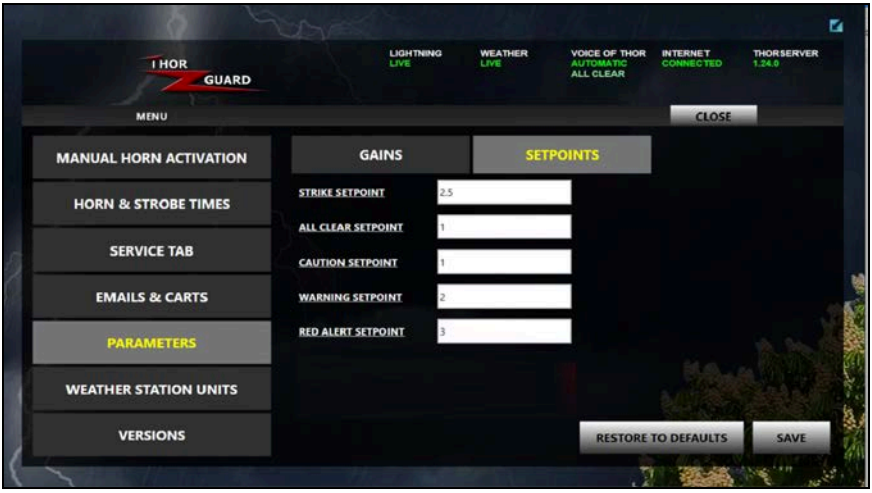
If you have EzGo golf carts at your facility, then please contact Thor Guard Software Support Team members to assist with the Site ID, Username and Password.

support@thorguard.com

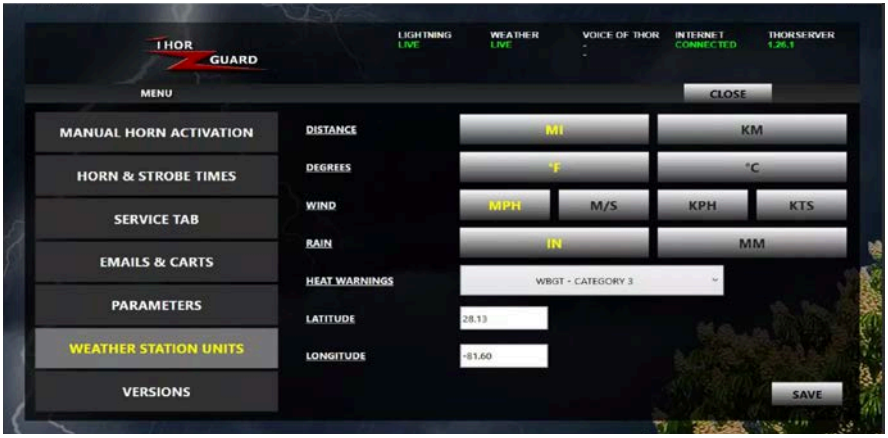
Parameters Tab



This tab is for Certified Personnel such as Thor Guard Territory Managers. Do not change any of these settings and parameters without consulting with Thor Guard first.



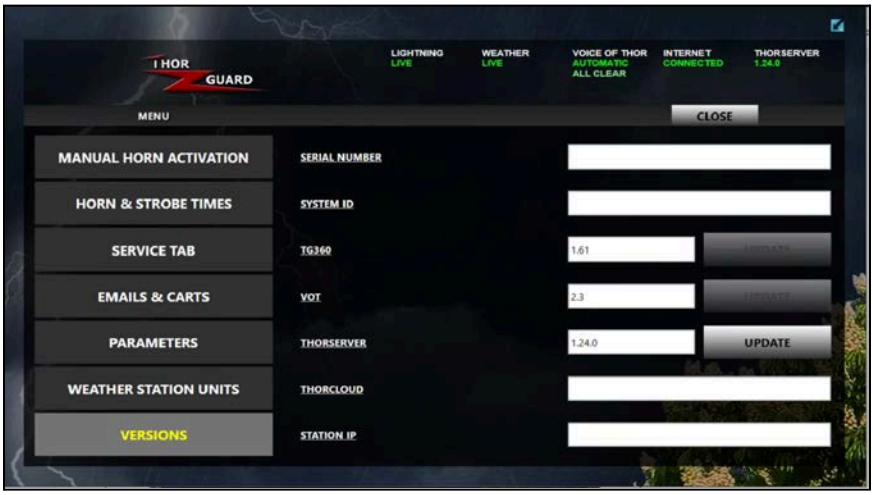
Weather Station Units Tab



In this tab you can choose from different units to display with your lightning and weather station values.

DISTANCE
MI (Miles) or KM (Kilometers)
Values affected - Lightning strike distance
DEGREES
F (Farenheit) or C (Celsius)
Values affected - Temperature, Heat Index, Dewpoint
WIND
MPH (Miles per hour) or M/S (Metres per second) or KPH (Kilometers per hour) or KTS (Knots)
Values affected - Wind Speed, Wind Direction
RAIN
IN (Inches) or MM (Millimeters)
Values affected - Rain Today, ET Rate
HEAT WARNINGS
The user can choose whether they want the Heat Index or the Wet Bulb Globe Temperature Estimate to determine their Heat Warning alerts/notifications. See page 14 for Heat Warning Definitions.
LATITUDE and **LONGITUDE**
These values help with different aspects of the system, including the Heat Warnings.

Versions Tab



This tab simply displays the different version numbers of your TG360 firmware, VOT firmware and ThorServer software. It also holds your Serial Number and System ID as well as where your data is being sent to ThorCloud and where your weather station is coming from locally in your Edgerouter.

THOR GUARD
VOICE OF THOR REQUIREMENTS

Version 3.91

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This document may contain confidential or privileged information. The information in this document is meant for only the intended recipient(s). If you are not the intended recipient(s), please delete it without disclosing it to anyone and notify us immediately.

VOT Horn Behavior - VOTB and VOTR

The following table defines the behavior of the horns and strobes for each of the advisory levels when not in scheduled disabled periods (see Thor Server Scheduling). There is a UDP messages defined to configure the options identified in the table that follows. These options affect the All Clear, Caution, Heat Warning 1, Warning, Heat Warning 2, and the Red Alert Advisory States. There are two types of All Clear and Red Alert activation configurations, Standard and USGA, where the default is Standard. The configurations for Caution, Heat Warning 1, Warning and Heat Warning 2 default is disabled. They can each be individually enabled by an authorized user.

VOTB and VOTR Horns and Strobes Configuration

Advisory Level	Manual Override Priority**	Horns and Strobes Optional	Horns	Strobe 1	Strobe 2	Strobe 3
All Clear, Standard	0*	No*	3 blasts @ 5s	Off	Off	Off
All Clear, USGA	0*	No*	1 blast @ 10 s	Off	Off	Off
Heat Warning 1	2	Yes (Default to disabled)	1 blasts @ 4 s	On	Off	Off
Heat Warning 2	3	Yes (Default to disabled)	2 blasts @ 4 s	Off	On	Off
Caution	4	Yes (Default to disabled)	1 blasts @ 4 s	On	Off	Off
Warning	5	Yes (Default to disabled)	2 blasts @ 4 s	Off	On	Off
Red Alert, Standard	6*	No*	1 blast @ 15 s	Off	Off	On
Red Alert, USGA	6*	No*	2 blasts @ 6 s	Off	Off	On
Severe Storm	7	N/A	Off	Off	Off	On
Tornado Warning	8	No	30 blasts @ 1 s	Off	Off	On
GENS Emergency	9	No	30 blasts @ 1 s	Off	Off	On

* Standard and USGA are mutually exclusive.
** Higher number indicates higher priority.

TG-VOTB

The TG-360, TG-VOTB and Thor Server all send a 1 s periodic status message. Fields in that message contain information that is used by each device. The TG-VOTB monitors the Advisory Level field from both the TG-360 and Thor Server. The VOT will operate the horns and strobes based on the received Advisory Level state with the highest priority.

Example 1: The TG-360 indicates a Red Alert Advisory Level state and Thor Server indicates a GENS Advisory Level state. The VOT will operate the horns and strobes as defined for GENS.

Example 2: The TG-360 indicates a Tornado Warning Alert Advisory Level state and Thor Server indicates a Red Alert Advisory Level state. The VOT will operate the horns and strobes as defined for Tornado Warning.

The VOTB will resend the current alert level to the VOTR(s) after 15 s and then repeat 2 more times at 30 s intervals. This helps mitigate times when intermittent RF interference is affecting the receivers.

TG-VOTSB

The VOTSB does not directly control horns and strobes, it controls six signal relays that can be connected to the inputs of the customer's device(s). Each signal relay represents one of five advisory level states: Caution, Warning, Red Alert, Severe Storm, Tornado Warning, GENS, where no signal relays activated indicate All Clear. Signal relays are mutually exclusive. Like the VOTB, the TG-VOTSB monitors the Advisory Level field from both the TG-360 and Thor Server. The VOT will operate its signal relays based on the received Advisory Level state with the highest priority.

Example 1: The TG-360 indicates a Red Alert Advisory Level state and Thor Server indicates a GENS Advisory Level state. The VOT will activate the GENS signal relay.

Example 2: The TG-360 indicates a Tornado Warning Alert Advisory Level state and Thor Server indicates a Red Alert Advisory Level state. The VOT will operate the Tornado Warning signal relay.

ThorServer Software

Thor Console's status message advisory level override default state will be the All Clear Advisory Level which implies that the TG-360's advisory level will determine the operation of the horns and strobes for the VOTB and the signal relays for the VOTSB.

TG-VOTR

VOTR does not have any means to report data back to the VOTB therefore it is the responsibility of the VOTB to communicate to the VOTR the operation of its horns and strobes.

For each valid received RF packet, the external status LED flashes 5 times per second for two seconds including during scheduled muted periods.

Thor Server Horns and Strobes Scheduling

An authorized user will be able to schedule time periods to independently disable the horns and strobes of the VOTB and VOTR and the signal relays for the VOTSB. The status message has time fields that Thor Server will use to communicate the schedule to the VOT.

The customer options of activating horn and strobe sequences for both the heat warning values and caution and warning for lightning. The customer needs to opt in, using the server, for one or the other, or neither.

If a horns and or strobe disable period ends during a Red Alert or worse condition, the horns and strobes should activate as if first entering the Red Alert or worse state.

Enabled State

The horns and strobes will activate as per the VOTB and VOTR Horns and Strobes Configuration table.

Disabled State

While in the Disabled state, the VOT will not activate the Horns or the Strobes. The GENS and Tornado Warning Advisory Level states bypass the Disabled state. If, during this state, a GENS advisory state is activated, the horns and strobes will activate as per the VOTB and VOTR Horns and Strobes Configuration table. If still in the Disabled state when the All Clear state is activated, only the strobes will be activated to indicate All Clear.

TG-360 Mute State

Feature to mute advisory levels from TG-360, effectively allowing the system to be put into manual mode.

VOTB and VOTR Low Battery Safe State

If the battery voltage is less than 11.0 V, for more than 5 minutes continuously, the horns and strobe will be disabled to conserve battery energy while waiting for the battery to be recharged or replaced. When the battery voltage exceeds 11.6 V, for 15 seconds continuously, the horns and strobes will be reenabled. Also, see paragraph below, External Status LED.

VOT Testing Behavior - VOTB and VOTR Tests and Activations

While in the All Clear advisory level state, tests can be manually activated from ThorConsole. The following table lists the tests and their behaviors as well as the Shotgun activation.

VOTB and VOTR Tests and Activations

Activation	Horn 1	Horn 2	Strobe 1	Strobe 2	Strobe 3	Status LED
VOTB Compressor 1	1 blasts @ 1s	Off	Off	Off	Off	On/Blinks*
VOTB Compressor 2	Off	1 blasts @ 1s	Off	Off	Off	On/Blinks*
VOTB Compressor 1 & 2	Off	1 blasts @ 1s	Off	Off	Off	On/Blinks*
VOTR Compressor 1	1 blasts @ 1s	Off	Off	Off	Off	On/Blinks*
VOTR Compressor 2	Off	1 blasts @ 1s	Off	Off	Off	On/Blinks*
VOTR Compressor 1 & 2	Off	1 blasts @ 1s	Off	Off	Off	On/Blinks*
VOTB Strobes	Off	Off	On	On	On	On/Blinks*
VOTR Strobes	Off	Off	On	On	On	On/Blinks*
RF Test	Off	Off	Off	Off	Off	On/Blinks*
Shotgun	3 blasts @ 5s	3 blasts @ 5s	Off	Off	Off	On/Blinks*
Battery & Charger Test	Off	Off	Off	Off	Off	On/Blinks*

* Note: VOTB blinks to indicate transmitting and VOTR blinks to indicate receiving.
**Note: See previous note and see following External Status LED for battery and charging.

VOT LED Behavior - External Status LED

The external status LED provides VOT status except during scheduled muted periods.

All systems normal: LED cycle 1s on, 9s off.
Low Battery less than 11.6 V: the Status LED cycles 1s on, 1s off. The strobes will flash for 10 seconds every 10 minutes, for a total of six cycles (one hour).
Low Charging Voltage: Not implemented.
Horn 1/2, open circuit or short circuit or over temperature: LED cycles 6s on, 6s off.
System ID mismatch: LED cycles 9s on, 9s off (VOTB only).
Device Over Temperature: LED cycles 12s on, 12s off.
Power Cycle Counts over 100: LED cycles 12s on, 12s off.

RF Test

ThorClient/Server will provide an RF test feature that will enable the service tech to start a 40 minute test of the RF communications between the VOTB and the system's VOTR(s). ThorClient/Server will send the RF test command (see the VOTB and VOTR Tests and Activations table above) once every 30 seconds for 40 minutes. The service tech should have the ability to manually initiate the test and terminate the test. If the system goes into a storm advisory level or a user override advisory level is commanded, this test will terminate. The VOTB will only performs manual tests during the All Clear advisory level state.

Added a feature to the VOTB to command the VOTR to go to All Clear when the VOTB is in All Clear. Sometimes a VOTR misses the All Clear RF message and remains in an alert level, Red Alert for example. To send the All Clear, send the RF Test message when the VOTB is in All Clear.

THOR GUARD
SYSTEM SPECIFICATIONS

TG-360 Sensor Specs

The TG360 is the world's most advanced Lightning Prediction System while also having the world's fastest onsite lightning detection technology. It all starts with the revolutionary TG360 sensor up on your roof with the best view of your sky. The sensor is made in the USA from UV protected ASA plastic that requires no maintenance and does not rust. The electrostatic atmospheric sampling rate of the TG360 is greater than 170,000 samples per second - combined with the integrated photocells, means the TG360 literally sees light and energy in every direction. Cat5 Ethernet cable connects the TG360 sensor to the power injectors inside.

AlphaWire CAT5e Cable Specs

Construction

1) Component 1	1 X 4 PAIR	
a) Conductor	24 (7/32) AWG Copper Alloy	0.024
b) Insulation	0.011" Wall, Nom. Polyplefin(PO)	0.046
(1) Color(s)		

Pair	Color	Pair	Color	Pair	Color
1	BLUE - WHITE/BLUE	3	GREEN - WHITE/GREEN		
2	ORANGE - WHITE/ORANGE	4	BROWN - WHITE/BROWN		

c) Pair	2/Cond Cabled Together	
(1) Twists:	13.7 Twists/foot (approx.)	
d) Cabling	4 PAIR Cabled	
(1) Twists:	3.0 Twists/foot (min)	
e) Jacket	0.020" Wall, Nom.,TPE	0.254 (0.268 Max.)
(1) Color(s)	WHITE	
2) Shield:	Alum/Mylar Tape, 25% Overlap, Min.	
a) Foil Direction	Foil Facing Out	
b) Braid	Tinned Copper,85% Coverage, Min.	
3) Jacket	0.030" Wall, Nom.,TPE	0.342 (0.364 Max.)
a) Color(s)	BLACK	
b) Ripcord	1300 1/E NATURAL POLYESTER	
c) Print	ALPHA WIRE-* P/N 7602F 4PR 24 AWG CONTINUOUS FLEX INDUSTRIAL ETHERNET (UL) C(UL) TYPE CM 75C FT1 ANSI/TIA-568-C.2 CAT5E PATCH VERIFIED CE ROHS (SEQ FOOTAGE) * = Factory Code *[Note: Product may have c(UL) or CSA markings depending upon plant of manufacture.]*	

Applicable Specifications

1) UL	VW-1	
	AWM/STYLE 20626	80°C / 300 V_{RMS}
2) CSA International	C(UL) FT1	
3) Other	ISO/IEC 11801 Category 5e Patch Cable	
	ICEA 661 Category 5 Patch	
	NEMA WC-63.1 Category 5e Patch	
4) CE:	EU Low Voltage Directive 2006/95/EC	

Environmental

1) CE: EU Directive 2011/65/EU(RoHS2):	
	This product complies with European Directive 2011/65/EU (RoHS Directive) of the European Parliament and of the Council of 8 June 2011and the amending Directive 2015/863/EU of 4 June 2015 . No Exemptions are required for RoHS Compliance on this item. Consult Alpha Wire's web site for RoHS C of C.
2) REACH Regulation (EC 1907/2006):	
	This product does not contain Substances of Very High Concern (SVHC) listed on the European Union's REACH candidate list in excess of 0.1% mass of the item. For up-to-date information, please see Alpha's REACH SVHC Declaration.
3) California Proposition 65:	Exempt from warning labels based on the Consent Judgment. Please see Alpha's CA Prop 65 Statement for more information.

Other

Packaging	Flange x Traverse x Barrel (inches)
a) 1000 FT	18 x 12 x 8 Continuous length
b) 500 FT	16 x 11 x 8 Continuous length
	[Spool dimensions may vary slightly]

EU/China ROHS Certificate of Compliance

To Whom It May Concern:

Alpha Wire Part Number: 7602F

7602F, RoHS-Compliant Commencing With 9/30/2013 Production

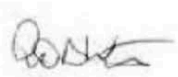
Note: all colors and put-ups

This document certifies that the Alpha part number cited above is manufactured in accordance with Directive 2011/65/EU of the European Parliament, better known as the RoHS Directive (commonly known as RoHS 2), with regards to restrictions of the use of certain hazardous substances used in the manufacture of electrical and electronic equipment. This certification extends to amending Directive 2015/863/EU which expanded the list of restricted substances to 10 items (commonly known as RoHS 3) The reader is referred to these Directives for the specific definitions and extents of the Directives. **No Exemptions are required for RoHS Compliance on this item**. Additionally, Alpha certifies that the listed part number is in compliance with China RoHS "Marking for Control of Pollution by Electronic Information Products" standard SJ/T 11364-2014.

Substance	**Maximum Control Value**
Lead	0.1% by weight (1000 ppm)
Mercury	0.1% by weight (1000 ppm)
Cadmium	0.01% by weight (100 ppm)
Hexavalent Chromium	0.1% by weight (1000 ppm)
Polybrominated Biphenyls (PBB)	0.1% by weight (1000 ppm)
Polybrominated Diphenyl Ethers (PBDE) ,	
Including Deca-BDE	0.1% by weight (1000 ppm)
Bis(2-ethylhexyl) phthalate (DEHP)	0.1% by weight (1000 ppm)
Butyl benzyl phthalate (BBP)	0.1% by weight (1000 ppm)
Dibutyl phthalate (DBP)	0.1% by weight (1000 ppm)
Diisobutyl phthalate (DIBP)	0.1% by weight (1000 ppm)

The information provided in this document and disclosure is correct to the best of Alpha Wire's knowledge, information and belief at the date of its release. The information provided is designed only as a general guide for the safe handling, storage, and any other operation of the product itself or the one that it will become part of. The intent of this document is not to be considered a warranty or quality specification. Regulatory information is for guidance purposes only. Product users are responsible for determining the applicability of legislation and regulations based on their individual usage of the product.

Authorized Signatory for the Alpha Wire:



Dave Watson, Director of Engineering & QA 9/17/2020

Alpha Wire

711 Lidgerwood Ave.

Elizabeth, NJ 07207

Tel: 1-908-925-8000

Voice of Thor Enclosure Specs

Enclosure Material: Sealed Gray Fiberglass
Enclosure Manufacture: Stahlin Enclosures
Dimensions: 14" W x 12" L x 7 1/2" H Safety
Requirement: UL, CSA, Nema Type 4X
Mounting: 3/8 Ubolt or 1/4 - 5/16 lag bolt
Manufacture: THOR GUARD
RF Specifications Frequency: 27.255MHZ FSK
FCC Certifications: Part 15 and Part 95
Antenna: Fiberglass - 4FT & 2FT Tuned. RF
Power: 4.0 Watts or 12.0 Watts

Cable: West Penn RGS8 / U Coaxial SO Ohm - I
Conductor 20 AWG I 9x32 Tinned Copper,
95% Tinned Copper braid and an overall PVC Jacket. NEC RATING:
CM Approvals: (UL) C(UL) Listed

Voice of Thor Horn Specs

Material: ASA Dome & horn mounting plate
Mounting:1" PVC Threaded
Bushing (Included)
Weight: 8 Lbs. (Excludes
cable)

Horn Manufacture: Stebel, Italy
Horn Compressor Rating: 12V DC
Sound: 3 - Frequencies
Output: 113db @ 10ft, 700 Yard Radius, Typical Coverage
Cable: General Cable 234600 12AWG (UL) Type TC-ER

LED Strobe Specs

• SAE Class 1 Certified - L51 Series
• SAE Class 3 Certified - L53 Series (Amber)
• Polycarbonate Black base & twist-off domes
• 100% solid-state and conformal coated electronics
• Hard-coated domes minimize environmental damage from sand, sun, salt, and road chemicals
• Full reverse polarity protection
• 75 SignalAlert™ flashes per minute
• Rated for thousands of hours of use
• 12 VDC, for 24 VDC models contact factory
• L51: 1.5 Amp (peak), 0.6 Amp (average)

L51
• SmartLED® beacon design
• Fully encapsulated for moisture, vibration, and corrosion resistance

Permanent Mount
• Supplied with a 6" pigtail
• Synchronize with up to eight Whelen beacons (L51 models)
• Hi/Low intensity control

Cable
• West Penn AQ224, Outdoor Rated UL Listed Nec Type, FPL or PLTC,¼" Dia. 18AWG, 2 Conductor, Sunlight and Moisture Resistant PVC Jacket.

High Dome LED Strobe Specs

• SAE Class 1 Certified - L21 (Amber)
• SAE Class 2 Certified - L22 (Amber) and White/Clear high domes
• High or low dome models available
• Polycarbonate base
• Full reverse polarity protection
• 100% solid-state electronics
• Hard-coated domes minimize environmental damage from sand, sun, salt, and road chemicals
• Fully encapsulated for moisture, vibration, and corrosion resistance
• SmartLED® beacon design
• Available in permanent, magnetic, or magnetic/suction mount models
• L21 models are available in Amber or White
• L22 models are available in Amber, Blue, Red,or White
• Rated for thousands of hours of use
• Integrate with other Whelen beacons through synchronize feature
• Virtually no RFI/EMI radiation
• Low current draw: 1.5 amp (peak), 0.6 amp (average) @12.8 VDC
• Low dome: 5-5/16" (134mm) H x 6-7/16" (163mm) Dia.
• High dome: 6-13/16" (172mm) H x 6-7/16" (163mm) Dia.

Permanent Mount
• Combination mounting: 1"? pipe/permanent
• Supplied with a 6" pigtail
• 25 Scan-Lock™ alternating and simultaneous flash patterns, including steady-burn
• Synchronize with up to eight Whelen beacons
• Photocell Hi/Low mode available, contact factory
• 12 VDC, for 24 VDC models contact factory

Cable
• West Penn AQ224, Outdoor Rated UL Listed Nec Type, FPL or PLTC,¼" Dia. 18 AWG, 2 Conductor, Sunlight and Moisture Resistant PVC Jacket.

Weather Station - Davis Vantage Pro2 GroWeather Specs

Vantage Pro2™
GroWeather®

6825
6825C

GroWeather wireless and cabled weather stations include an Integrated Sensor Suite (ISS) which houses and manages the external sensor array. The wireless ISS communicates via an FCC-certified, license-free, spread-spectrum frequency-hopping (FHSS) transmitter and receiver. User-selectable transmitter ID codes allow up to eight stations to coexist in the same geographic area. The frequency hopping spread spectrum technology provides greater communication strength over longer distances and areas of weaker reception. The cabled ISS communicates via cable.

The temperature and humidity sensors are shielded with both passive shielding and a solar-powered fan that draws outside air in over the sensors, providing a much more accurate temperature reading than that available using passive shielding alone.

The ISS also includes a Solar Radiation Sensor to provide accurate evapotranspiration calculations.

General

Operating Temperature	-40° to +150°F (-40° to +65°C)
Non-operating Temperature	-40° to +158°F (-40° to +70°C)
Wireless	
Current Draw (ISS SIM only)	0.14 mA (average), 30 mA (peak) at 4 to 6 VDC
Solar Power Panel	0.5 Watts (ISS SIM), plus 0.75 Watts (Fan-Aspirated)
Battery (ISS SIM)	CR-123 3-Volt Lithium cell /
Battery Life (3-Volt Lithium cell)	8 months without sunlight - greater than 2 years depending on solar charging
Cabled	
Current Draw (ISS SIM only)	.5 mA (average) at 4 to 6 VDC
Fan Battery	2 - 1.2 Volt NiMH C-cells
Fan Battery Life	Up to 2 years
Fan Aspiration Rate	
Intake Flow Rate, full sun	190 feet/min. (0.9 m/s)
Intake Flow Rate, battery only	80 feet/min. (0.4 m/s)
Sensor Chamber Flow Rate, full sun	500 feet/min. (2.5 m/s)
Sensor Chamber Flow Rate, battery only	180 feet/min. (0.9 m/s)
Connectors, Sensor	Modular RJ-11
Cable Type	4-conductor, 26 AWG
Cable Length, Anemometer	40' (12 m) (included) 240' (73 m) (maximum recommended)

Note: Maximum displayable wind decreases as the length of cable increases. At 140' (42 m) of cable, the maximum wind speed displayed is 135 mph (60 m/s); at 240' (73 m), the maximum wind speed displayed is 100 mph (34 m/s).

Wind Speed Sensor	Solid state magnetic sensor
Wind Direction Sensor	Wind vane with potentiometer
Rain Collector Type	Tipping bucket, 0.01" per tip (0.2 mm with metric rain adapter), 33.2 in^2 (214 cm^2) collection area
Temperature Sensor Type	PN Junction Silicon Diode
Relative Humidity Sensor Type	Film capacitor element
Housing Material	UV-resistant ABS, ASA plastic (SPARS only)
ISS Dimensions	
(not including anemometer or bird spikes)	21.1" x 9.7" x 16.0" (536 mm x 246 mm x 406 mm)

DAVIS® Davis Instruments 3465 Diablo Ave., Hayward, CA 94545-2778 USA
(510) 732-9229 • FAX (510) 670-0589 • sales@davisnet.com • www.davisnet.com

DS6825 (Rev. A, 5/19/16)

Sensors

Relative Humidity (Outside)

Resolution	1%
Range	1 to 100% RH
Accuracy	±2%
Temperature Coefficient	0.03% per °F (0.05% per °C), reference 68°F (20°C)
Drift	±0.5% per year

Rainfall

Resolution	0.01" or 0.2 mm (user-selectable) (1 mm at totals ≥ 2000 mm)
Daily/Storm Rainfall Range	0 to 99.99" (0 to 999.8 mm)
Monthly/Yearly/Total Rainfall Range	0 to 199.99" (0 to 6553 mm)
Accuracy	For rain rates up to 4"/hr (100 mm/hr): ±4% of total or ± one tip of the bucket (0.01"/0.2mm), whichever is greater.
Update Interval	20 to 24 seconds

Rain Rate

Resolution and Units	0.01" or 0.1 mm (user-selectable) at typical rates (see Fig. 2 and 3)
Range	0, 0.04"/hr (1 mm/hr) to 96"/hr (0 to 2438 mm/hr)
Accuracy	±5% for rates less than 5" per hour (127 mm/hr)
Update Interval	20 to 24 seconds

Solar Radiation

Resolution and Units	1 W/m^2
Range	0 to 1800 W/m^2
Accuracy	±5% of full scale (Reference: Eppley PSP at 1000 W/m^2)
Drift	up to ±2% per year
Cosine Response	±3% for angle of incidence from 0° to 75°
Temperature Coefficient	-0.067% per °F (-0.12% per °C); reference temperature = 77°F (25 °C)
Update Interval	50 seconds to 1 minute (5 minutes when dark)

Temperature (Outside)

Resolution	0.1°F or 1°F or 0.1°C or 1°C nominal °C is converted from °F rounded to the nearest 1°C
Range	-40° to +150°F (-40° to +65°C)
Sensor Accuracy	±0.5°F (±0.3°C) See Fig. 1
Radiation Induced Error (Passive Shield)	+4°F (2°C) at solar noon (insolation = 1040 W/m^2, avg. wind speed ≤ 2 mph (1 m/s)) (reference: RM Young Model 43408 Fan-Aspirated Radiation Shield)
Radiation Induced Error (Fan-Aspirated Shield)	+0.6°F (0.3°C) at solar noon (insolation = 1040 W/m^2, avg. wind speed ≤ 2 mph (1 m/s)) (reference: RM Young Model 43408 Fan-Aspirated Radiation Shield)
Update Interval	10 to 12 seconds

Wind

Wind Direction

Range	0 - 360°
Display Resolution	16 points (22.5°) on compass rose, 1° in numeric display
Accuracy	±3°
Update Interval	2.5 to 3 seconds

Wind Speed

Resolution and Units	1 mph, 1 km/h, 0.4 m/s, or 1 knot (user-selectable). Measured in mph, other units are converted from mph and rounded to nearest 1 km/hr, 0.1 m/s, or 1 knot.
Range	1 to 200 mph, 1 to 173 knots, 0.5 to 89 m/s, 1 to 322 km/h
Update Interval	Instant Reading: 2.5 to 3 seconds, 10-minute Average: 1 minute
Accuracy	±2 mph (2 kts, 3 km/h, 1 m/s) or ±5%, whichever is greater
Maximum Cable Length	240' (73 m) (See note on page 1)

Wireless Communications (wireless versions only)

Transmit/Receive Frequency	
US Models	902 - 928 MHz FHSS,
EU Models	868.0 - 868.6 MHz FHSS
Japan Models	928.15 - 929.65 MHz FHSS
NZ Models	921 - 928 MHz FHSS
India Models	865.0 - 867.0 MHz FHSS
ID Codes Available	8
Output Power	
US Models	902 - 928 MHz FHSS: FCC-certified low power, less than 8 mW, no license required
EU Models	868.0 - 868.6 MHz FHSS. CE-certified, less than 8 mW, no license required.
Japan Models	928.15 - 929.65 MHz FHSS, less than 1 mW, no license required.
NZ Models	921- 928 MHz FHSS, less than 10mW, no license required.
India Models	865.0 - 867.0 MHz, less than 10mW, no license required.
Range: All models except Japan	
Line of Sight	up to 1000 feet (300 m)
Through Walls	200 to 400 feet (60 to 120 m)
Range: Japan models	
Line of Sight	up to 300 feet (100 m)
Through Walls	50 to 200 feet (15 to 60m)
Sensor Inputs	
RF Filtering	RC low-pass filter on each signal line

Sensor Charts

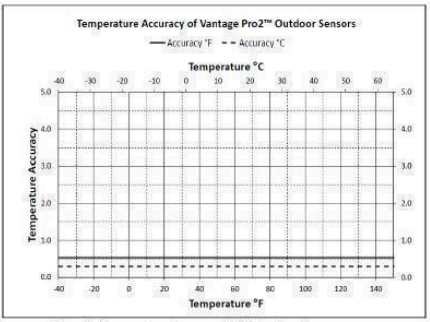


Figure 1: Temperature Accuracy of GroWeather Sensor

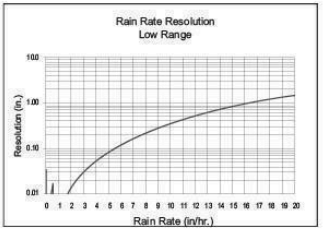


Figure 2. Low Range Rain Rate Resolution

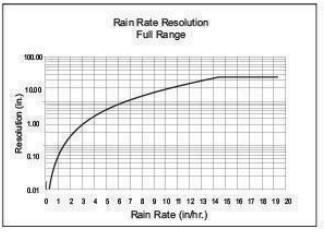


Figure 3. Full Range Rain Rate Resolution

Package Dimensions

Product #	Package Dimensions (Length x Width x Height)	Package Weight	UPC Codes
6825 6825OV	14.9" x 12.9" x 23.4" (L x W x H) (378 mm x 328 mm x 594 mm)	17 lbs 3 oz. (7.8 kg)	011698 01225 1 011698 01265 7
6825C 6825CX	14.9" x 12.9" x 23.4" (L x W x H) (378 mm x 328 mm x 594 mm)	18 lbs. 7 oz. (8.4 kg)	011698 01224 4 011698 01237 4

Ubiquiti - PoE Injector / Adapter Specs

Models

POE-25-5W

POE-24-7W-G-WH

POE-15-12W
POE-24-12W
POE-24-12W-G

POE-24-12W-G-WH

POE-24-24W-WH

POE-24-30W-G-WH

POE-24-AF5X

POE-24-24W
POE-24-24W-G
POE-24-30W

POE-48-24W
POE-48-24W-G

POE-24-24W-G-WH

POE-48-24W-WH
POE-48-24W-G-WH

U-POE-af

POE-50-60W

POE-50-60W-WH

POE-54-80W

Specifications

Model	POE-48-24W-WH	POE-48-24W-G-WH	POE-50-60W, POE-50-60W-WH
Dimensions	93 x 59 x 33 mm (3.66 x 2.32 x 1.30")	96 x 62 x 35 mm (3.78 x 2.44 x 1.38")	101 x 60 x 33 mm (3.98 x 2.36 x 1.30")
Weight	145 g (5.12 oz)	166 g (5.86 oz)	192 g (6.77 oz)
Output Voltage	48VDC @ 0.5A	48VDC @ 0.5A	50VDC @ 1.2A
LAN Activity Indicator	No	No	No
Gigabit LAN Port	No	Yes	Yes
Remote Reset Capability	No	No	No
Reset Button	No	No	No
Rated Voltage	100-240VAC @ 50/60Hz	100-240VAC @ 50/60Hz	100-240VAC @ 50/60Hz
Input Current	0.6A @ 120VAC, 0.4A @ 240VAC	0.6A @ 120VAC, 0.4A @ 240VAC	1.3A @ 120VAC, 0.75A @ 230VAC
Inrush Current	<60A Peak @ 120VAC, <120A Peak @ 230VAC	<65A Peak @ 120VAC, <130A Peak @ 230VAC	<100A Peak @120VAC, <200A Peak @ 230VAC
Efficiency	80+%	80+%	85+%
Output Ripple	1% Max.	1% Max.	1% Max.
Switching Frequency	65 kHz	65 kHz	65 kHz
Line Regulation	≤ 3%	≤ 3%	≤ 3%
Load Regulation	≤ 5%	≤ 5%	≤ 5%
2-Pair Powering	Pins 4, 5 (+) and Pins 7, 8 (-)	Pins 4, 5 (+) and Pins 7, 8 (-)	–
4-Pair Powering	–	–	Pins 1, 2, 4, 5 (+) and Pins 3, 6, 7, 8 (-)
Operating Temperature	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)	0 to 40°C (32 to 104°F)
Storage Temperature	-30 to 70°C (-22 to 158°F)	-30 to 70°C (-22 to 158°F)	-30 to 70°C (-22 to 158°F)
Operating Humidity	5 to 90% Noncondensing	35 to 95% Noncondensing	35 to 95% Noncondensing
AC Connector	IEC-320 C6	IEC-320 C6	IEC-320 C6
Data IN / POE	RJ45 Shielded Socket	RJ45 Shielded Socket	RJ45 Shielded Socket
Surge Protection	Difference and Common Mode	Difference and Common Mode	Difference and Common Mode
Clamping Protection	11V Data, 60V Power	11V Data, 60V Power	11V Data, 60V Power
Max. Surge Discharge	1500A (8/20 µs) Power	1500A (8/20 µs) Power	1500A (8/20 µs) Power
Peak Pulse Current	36A (10/1000 µs) Data	36A (10/1000 µs) Data	36A (10/1000 µs) Data
Shunt Capacitance	<5 pF data	<5 pF data	<5 pF data
Response Time	<1 ns	<1 ns	<1 ns
Certifications	CE, FCC, IC, UL	CE, FCC, IC, UL	CE, FCC, IC, UL

Specifications

Model	POE-54-80W
Dimensions	123 x 65 x 34 mm (4.84 × 2.56 × 1.34")
Weight	299 g (10.55 oz)
Output Voltage	54VDC @ 1.5A
LAN Activity Indicator	No
Gigabit LAN Port	Yes
Remote Reset Capability	No
Reset Button	No
Rated Voltage	100-240VAC @ 50/60Hz
Input Current	0.8A @ 120VAC, 0.4A @ 240VAC
Inrush Current	<80A Peak @ 120VAC, <120A Peak @ 230VAC
Efficiency	87+%
Output Ripple	1% Max.
Switching Frequency	100 kHz Max.
Line Regulation	≤ 3%
Load Regulation	≤ 5%
2-Pair Powering	–
4-Pair Powering	Pins 1, 2, 4, 5 (+) and Pins 3, 6, 7, 8 (-)
Operating Temperature	0 to 40° C (32 to 104° F)
Storage Temperature	-30 to 70°C (-22 to 158° F)
Operating Humidity	35 to 95% Noncondensing
AC Connector	IEC-320 C6
Data IN / POE	RJ45 Shielded Socket
Surge Protection	Difference and Common Mode
Clamping Protection	11V Data, 60V Power
Max. Surge Discharge	1500A (8/20 µs) Power
Peak Pulse Current	36A (10/1000 µs) Data
Shunt Capacitance	<5 pF data
Response Time	<1 ns
Certifications	CE, FCC, IC, UL

Specifications are subject to change. Ubiquiti products are sold with a limited warranty described at: www.ubnt.com/support/warranty
The limited warranty requires the use of arbitration to resolve disputes on an individual basis, and, where applicable, specify arbitration instead of jury trials or class actions.
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www.ubnt.com

Ubiquiti - EdgeRouter Specs

EdgeRouter X | DATASHEET

EdgeMAX®

Overview

Ubiquiti Networks introduces the EdgeRouter™ X, part of the EdgeMAX® platform. The EdgeRouter X combines carrier-class reliability with excellent price-to-performance value in an ultra-compact form factor.

PoE Versatility

Two models of the EdgeRouter X are available. The standard model, the ER-X, can be powered by an external power adapter or 24V passive PoE input. A passive PoE passthrough option[1] is available to support a single airMAX® device[2].

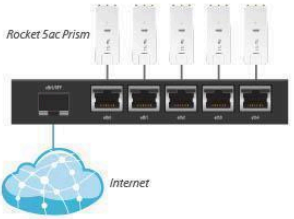
The SFP model, the ER-X-SFP, is powered by an external power adapter. The five Gigabit RJ45 ports support 24V passive PoE output for airMAX or UniFi® devices, while its SFP port provides fiber connectivity to support backhaul applications.

Configuration Methods

Powered by a proprietary and intuitive graphical interface, EdgeOS®, every EdgeRouter X can easily be configured for the routing, security, and management features required to efficiently run your network. For advanced network professionals, an integrated CLI is available for quick and direct access using familiar commands.

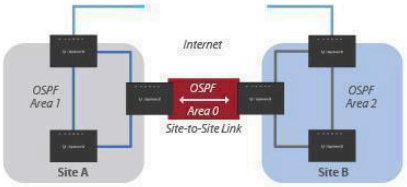
Example of a CPE Deployment for the ER-X

Powered by 24V passive PoE, the ER-X provides data with 24V passive PoE to the NanoBeam® ac and data to the UniFi Video Camera G3 Dome, UniFi AP AC LR, and computer.



Example of a Backhaul Deployment for the ER-X-SFP

Powered by the included 24V power adapter, the ER-X-SFP has a fiber connection to the Internet and provides data with 24V passive PoE to the five Rocket®5ac Prism radios.



Example of a Service Provider Deployment for the ER-X

Multiple ER-X devices connect the Internet and three OSPF areas of the service provider's network.

[1] Requires 24V passive PoE or a 12W minimum power adapter (not included).

[2] Check your airMAX device's specifications for voltage and wattage requirements.

Intuitive User Interface

The EdgeRouter X provides a graphical user interface designed for convenient setup and control.

Accessed via a network port and web browser, the user-friendly interface provides intuitive management with a virtual view of the ports, displaying physical connectivity, speed, and status.

The Dashboard displays detailed statistics: IP information, MTU, transmit and receive speeds, and status for each physical and virtual interface.

Powerful Features

EdgeOS is a sophisticated operating system with robust features, including:

- VLAN interfaces for network segmentation
- Static routes and support of routing protocols: OSPF, RIP, and BGP
- Firewall policies and NAT rules
- DHCP services
- Quality of Service (QoS)
- Network administration and monitoring tools
- Administrator and operator accounts
- Comprehensive IPv6 support

Configuration by CLI

The CLI provides quick and flexible configuration by command line and features the following:

- For power users, configuration and monitoring of all advanced features
- Direct access to standard Linux tools and shell commands
- CLI access through SSH, Telnet, and the graphical user interface

Models

EdgeRouter X

Model: ER-X

- (5) Gigabit RJ45 ports
- Passive PoE passthrough option*
- Power via 24V passive PoE or power adapter
- Ports configurable for line-rate, Layer-2 switching
- 260 kpps for 64-byte packets
- 1 Gbps for 1518-byte packets

Front Panel

Back Panel

EdgeRouter X SFP

Model: ER-X-SFP

- (5) Gigabit RJ45 ports with passive PoE support
- (1) Gigabit SFP port for backhaul applications
- Ports configurable for line-rate, Layer-2 switching
- 260 kpps for 64-byte packets
- 1 Gbps for 1518-byte packets

Front Panel

Back Panel

* Requires 24V passive PoE or a 12W minimum power adapter (not included).

EdgeRouter X

Hardware Specifications

ER-X	
Dimensions	110 x 75 x 22 mm (4.33 x 2.95 x 0.87")
Weight	175 g (6.17 oz)
Max. Power Consumption	5W
Power Input	12VDC, 0.5A Power Adapter (Included) or 24V Passive PoE
Power Supply	External AC/DC Adapter
Supported Voltage Range	9 to 26VDC
Button	Reset
LED	Power, Ethernet 0-4
Processor	Dual-Core 880 MHz, MIPS1004Kc
System Memory	256 MB DDR3 RAM
Code Storage	256 MB NAND
Certifications	CE, FCC, IC
Wall-Mount	Yes
ESD/EMP Protection	Air: ± 24 kV, Contact: ± 24 kV
Operating Temperature	-10 to 45° C (14 to 113° F)
Operating Humidity	10 to 90% Noncondensing

Networking Interfaces	
Data/PoE Input Port	(1) 10/100/1000 RJ45 Port
Data Ports	(3) 10/100/1000 RJ45 Ports
Data/PoE Passthrough Port	(1) 10/100/1000 RJ45 Port

EdgeRouter X SFP

Hardware Specifications

ER-X-SFP	
Dimensions	142 x 75 x 23 mm (5.59 x 2.95 x 0.91")
Weight	215 g (7.58 oz)
Max. Power Consumption	5W
Max. Total PoE Output	50W @ 24V
PoE Output	Passive 24V (Pins 4, 5+; 7, 8-)
Power Input	24VDC, 2.5A Power Adapter (Included)
Power Supply	External AC/DC Adapter
Supported Voltage Range	9 to 26VDC
Button	Reset
LED	Power, Link/Activity (6), PoE (5)
Processor	Dual-Core 880 MHz, MIPS1004Kc
System Memory	256 MB DDR3 RAM
Code Storage	256 MB NAND
Certifications	CE, FCC, IC
Wall-Mount	Yes
ESD/EMP Protection	Air: ± 24 kV, Contact: ± 24 kV
Operating Temperature	-10 to 45° C (14 to 113° F)
Operating Humidity	10 to 90% Noncondensing

Networking Interfaces	
Data/PoE Output Port	(5) 10/100/1000 RJ45 Ports
Data Port	(1) 100/1000 SFP Port

PoE with 24VDC Power Adapter	
PoE Out Voltage Range	22-24VDC
Max. PoE Wattage Per Data/PoE Output Port	12W (24V)
Max. PoE Wattage Combined (All 5 Data Ports)	50W
PoE Method	Passive

EdgeOS

Software Specifications

EdgeOS	
Interface/Encapsulation	Ethernet 802.1q VLAN PPPoE GRE IP in IP Bridging Bonding (802.3ad)
Addressing	Static IPv4/IPv6 Addressing DHCP/DHCPv6
Routing	Static Routes OSPF/OSPFv3 RIP/RIPng BGP (with IPv6 Support) IGMP Proxy
Security	ACL-Based Firewall Zone-Based Firewall NAT
VPN	IPSec Site-to-Site and Remote Access OpenVPN Site-to-Site and Remote Access PPTP Remote Access L2TP Remote Access PPTP Client
Services	DHCP/DHCPv6 Server DHCP/DHCPv6 Relay Dynamic DNS DNS Forwarding VRRP RADIUS Client Web Caching PPPoE Server
QoS	FIFO Stochastic Fairness Queueing Random Early Detection Token Bucket Filter Deficit Round Robin Hierarchical Token Bucket Ingress Policing
Management	Web UI CLI (SSH, Telnet) SNMP NetFlow LLDP NTP UBNT Discovery Protocol Logging

Specifications are subject to change. Ubiquiti products are sold with a limited warranty described at: www.ubnt.com/support/warranty
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www.ubnt.com

UPS - APC Smart-UPS Specs

Technical Specifications

APC Smart-UPS 750VA LCD 120V TAA (Not for sale in Vermont) | SMT750US | Downloaded on 07/09/2020 (EST)

Life is On APC

APC Smart-UPS 750VA LCD 120V TAA (Not for sale in Vermont)

SMT750US

Call for More Information 800-800-4272

- Includes: CD with software, Documentation CD, USB cable

Output	
Output power capacity	500Watts / 750VA
Max Configurable Power (Watts)	500Watts / 750VA
Nominal Output Voltage	120V
Output Voltage Distortion	Less than 5 %
Output Frequency (sync to mains)	50/60 Hz +/- 3 Hz Sync to mains
Topology	Line interactive
Waveform type	Sine wave
Output Connections	(6) NEMA 5-15R (Battery Backup)
Transfer Time	4 ms typical : 8 ms maximum

Input	
Nominal Input Voltage	120V
Input frequency	50/60 Hz +/- 3 Hz Auto-sensing
Input Connections	NEMA 5-15P
Cord Length	6ft (1.8meters)
Input voltage range for main operations	75 - 154 Adjustable, 82 - 144V
Number of Power Cords	1

Batteries & Runtime	
Battery type	Lead-acid battery
Typical recharge time	3hour(s)

Disclaimer: Documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user's applications.

Batteries & Runtime	
Replacement Battery	RBC48
Expected Battery Life (years)	3 - 5
RBC Quantity	1
Battery Charge Power (Watts)	49Watts
Battery Volt-Amp-Hour Capacity	146
Runtime	View Runtime Graph (Available in Technical Tab on site) View Runtime Chart (Available in Technical Tab on site)
Efficiency	View Efficiency Graph (Available in Technical Tab on site)

Communications & Management	
Interface Port(s)	SmartSlot, USB
Control panel	Multifunction LCD status and control console
Audible Alarm	Alarm when on battery : distinctive low battery alarm : configurable delays
Emergency Power Off (EPO)	Optional
Available SmartSlot™ Interface Quantity	1

Surge Protection and Filtering	
Surge energy rating	540Joules
Filtering	Full time multi-pole noise filtering : 0.3% IEEE surge let-through : zero clamping response time : meets UL 1449

Physical	
Maximum Height	6.3inches (161MM, 16.1CM)
Maximum Width	5.4inches (138MM, 13.8CM)
Maximum Depth	14.3inches (363MM, 36.3CM)
Net Weight	29.06lbs. (13.18KG)
Shipping weight	31.37lbs. (14.23KG)
Shipping Height	11.9inches (301MM, 30.1CM)
Shipping Width	10.9inches (278MM, 27.8CM)
Shipping Depth	19.6inches (499MM, 49.9CM)
Color	Black

Disclaimer: Documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user's applications.

Technical Specifications

APC Smart-UPS 750VA LCD 120V TAA (Not for sale in Vermont) | SMT750US | Downloaded on 07/09/2020 (EST)

Life is On APC

Physical	
Units per Pallet	40.0

Environmental	
Operating Temperature	32 - 104 °F (0 - 40 °C)
Operating Relative Humidity	0 - 95 %
Operating Elevation	0 - 10000ft (0 - 3048meters)
Storage Temperature	-15 - 45 °C
Storage Elevation	0 - 50000ft (0 - 15240meters)
Audible noise at 1 meter from surface of unit	40.0dBA
Online thermal dissipation	90.0BTU/hr

Conformance	
Approvals	TAA compliance , UL 1778
Equipment protection policy	Lifetime : $150000
Standard warranty	3 years repair or replace (excluding battery) and 2 years for battery

Sustainable Offer Status	
RoHS	Compliant

Disclaimer: Documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user's applications.

Battery - Odyssey Extreme Series Specs

ODYSSEY Extreme Series Battery

ODS-AGM15L

(PC545)

(internal threaded brass terminals with M6 SS bolts)

Powersport vehicles need a powerful battery that's built to take the constant pounding that comes with the territory, whether it's is on land, sea, or snow.

The ODYSSEY battery can handle it. Featuring rugged construction and packed tightly with pure lead plates, the non-spillable AGM design ODYSSEY battery protects against the shock and vibration that can quickly destroy other batteries. And the pure lead plates mean more power-twice the overall power and three times the life of conventional batteries-up to 400 cycles at 80% depth of discharge!

Dimensions

Length	6.91 in
Width	3.29 in
Height (terminals included)	4.89 in
Height (container)	5.12 in
Weight	11.4 lbs

Specifications

Voltage	12
Pulse (5 second) Hot Cranking Amps (PHCA)	460
Cold Cranking Amps (CCA)	150
HCA	280
MCA	220
20Hr Nominal Capacity (Ah)	13
10Hr Nominal Capacity (Ah)	12
Reserve Capacity Minutes	18
Terminal	M6 Receptacle
Torque Spec in-lbs (Nm max)	50 (5.6)
Internal Resistance	10
Short Circuit	1200

https://www.odysseybattery.com/products/ods-agm15l-battery-pc545/

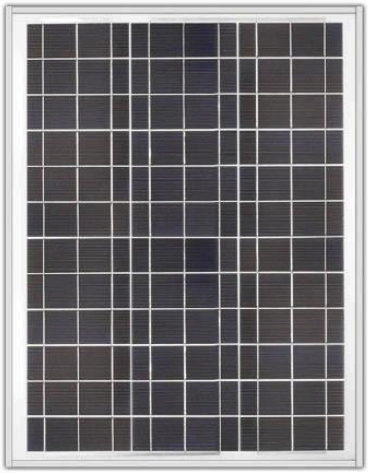
Solar Panel - BSP Panel Series Specs

BSP Panel Series - 40 Watt | www.amerescosolar.com | Phone: 1-855-437-6527

BSP Panel Series - 40W Solar Panel

BSP Panel Series

The BSP Panel Series is a line of outdoor solar modules that offers efficient solar cell technology combined with quality design and construction. The impact resistant glass surface and robust anodized aluminum frame can easily mount to optional pole mount brackets.



The BSP Panel Series features:

- High performance multi-crystalline cells
- High energy yields in a wide variety of climates
- Anodized aluminum frame provides for easy mounting

ELECTRICAL CHARACTERISTICS

Maximum power (P_{max})(1)	40W
Open circuit voltage (V_{oc})	22.2V
Maximum power voltage (V_{mp})	17.8V
Short circuit current (I_{sc})	2.60A
Maximum power current at (I_{mp})	2.40A

1. Values at Standard Test Conditions (STC): 1000W/m² irradiance, AM 1.5 solar spectrum and 25°C module temperature

MECHANICAL CHARACTERISTICS

Length: inches (mm)	27.48 (698)
Width: inches (mm)	20.94 (532)
Thickness: inches (mm)	1.33 (34)

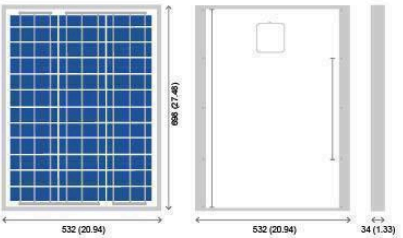
WARRANTY

10 year warranty

CERTIFICATIONS

CE

DIMENSIONS mm (in)

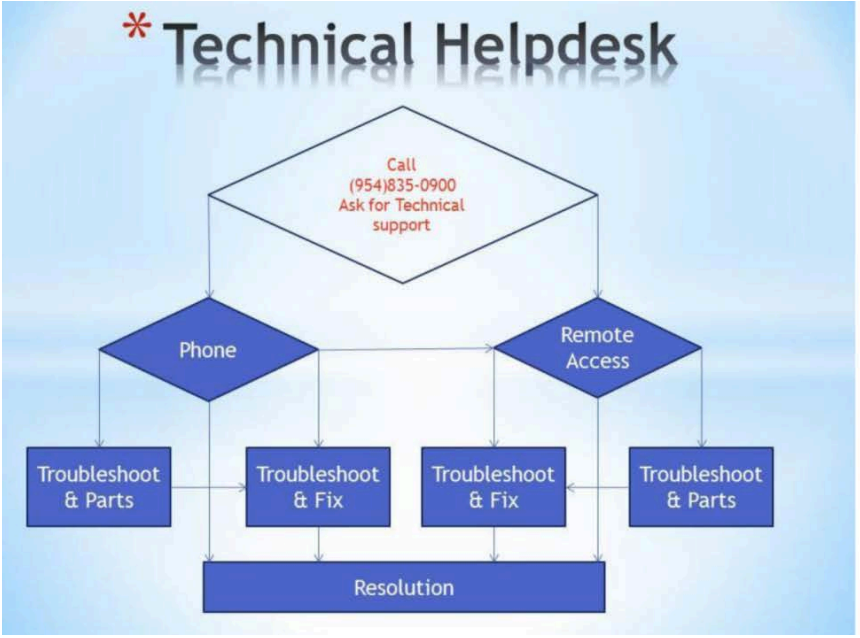


Photographs are intended to portray typical module appearance, actual module appearance may vary. Diagrams may not be proportionate and are intended for illustrative purposes only. 09/07/14

Offered by Ameresco Solar | www.amerescosolar.com | 1-855-437-6527

THOR GUARD
TECHNICAL SUPPORT

Our trained technical personnel will assist with all issues, and ensure a timely resolution, utilizing the latest tools for troubleshooting system issues.



Please contact THOR GUARD for Technical Support with your TG360 Lightning Prediction, Detection and Warning System

954.835.0900 support@thorguard.com