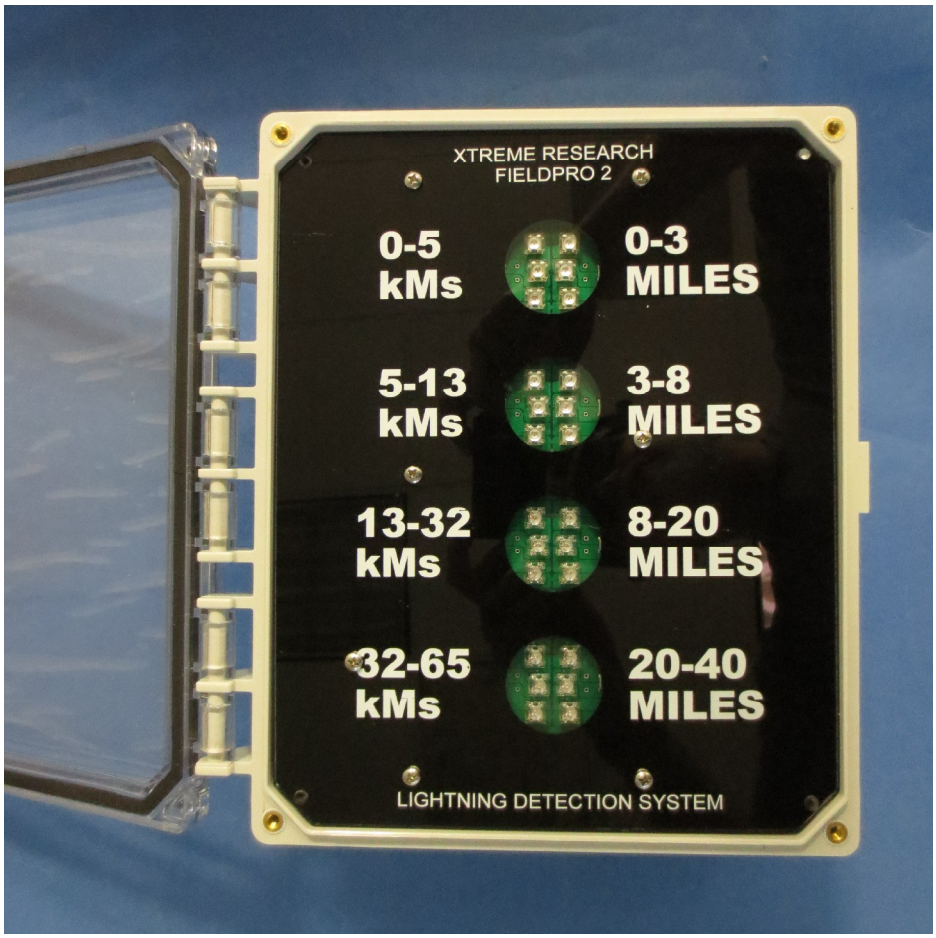
Field Pro
Installation and
Operation Manual



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Revision History

1.00	Initial Release	08/2016
1.01	Added 230V connection description	08/2016
1.02	Changed mounting descriptions	08/2016
1.03	Added instructions on ON/OFF switch	08/2016
1.04	Minor text corrections	11/2016

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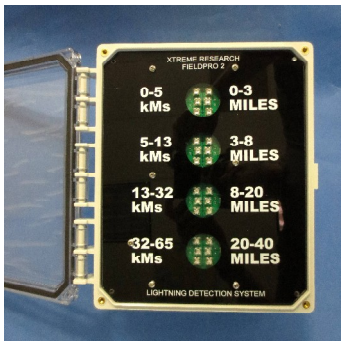
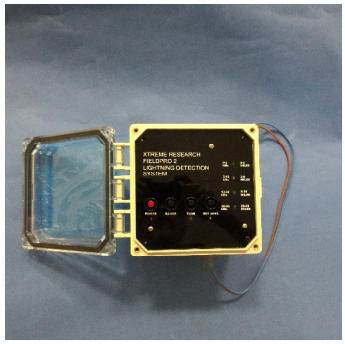
1. Installation

Description

The Field Pro comprises three units, interconnected by two cables that are shipped as a single, easily installed unit. The control box is intended to be placed near the supervisor's work area, the display box placed high and centrally located for easy visibility, and the alert box placed where the horn sound can be broadly heard. The boxes must be located 10 feet or more apart for best sensitivity and proper operation. Additionally, the display box contains the lightning detector and must not be mounted directly against a steel surface, like the side of a steel building or the back of an electrical control box. The three units are shown below.



Display Box



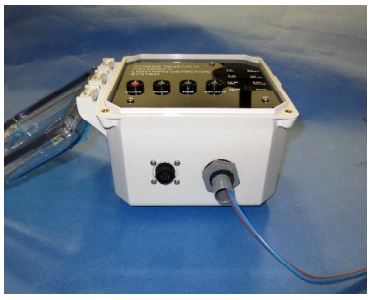
Control Box

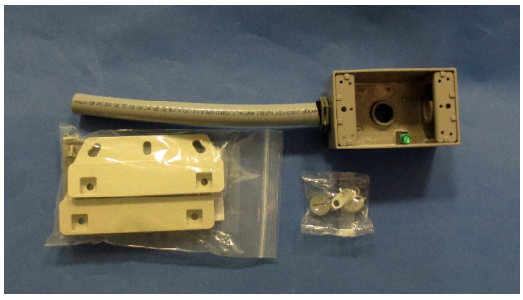
Alert Box

Control Box Installation

AC power is connected to the control box from a 2X4 watertight outlet box through a ½" flexible conduit, both supplied with the unit. The control box contains a UL approved AC to DC power converter that sources power to recharge and maintain the unit batteries. The converter output voltage is 15VDC at less than ½ Amp, which meets the requirements of the UL Low Voltage Directive.

The control box can be mounted to any flat surface using plastic tabs that are supplied with the unit. The conduit and mounting kit for the control box are shown below.

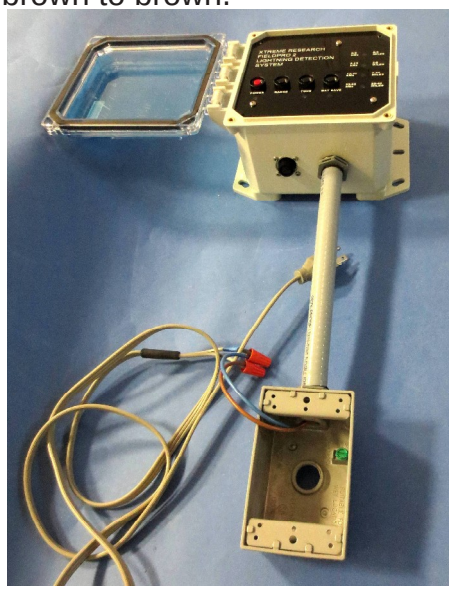




Control Box, Outlet Box, Conduit, and Mounting Tabs for Control Box

Attach the mounting tabs to the control box using the screws supplied in the kit. Mount the control box to the wall at a comfortable height, thread the blue and tan wires through the conduit, push the conduit onto the fitting on the control box, and attach the outlet box to the same surface. Run ½" conduit to the outlet box and run a minimum of AWG14 wire to the unit, typically white, black, and green. Connect the input neutral (white) wire to the tan lead in the box. Connect the input hot line (black) to the blue lead. Tie off the input ground (green) wire to the ground screw in the box.

The unit may be powered from 120VAC or 220VAC. In the USA, L1 connects to the blue wire, L2 or Neutral to the brown wire. Worldwide, connect blue to blue, brown to brown.



Control Box, Conduit, and Outlet Box

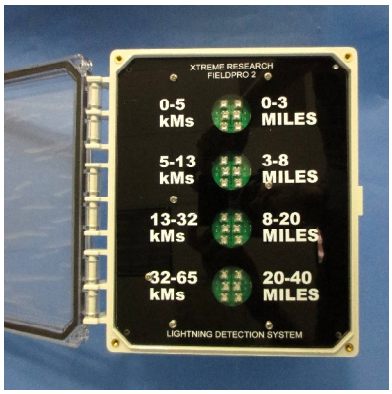
Battery Isolation Switch

Display Box Installation

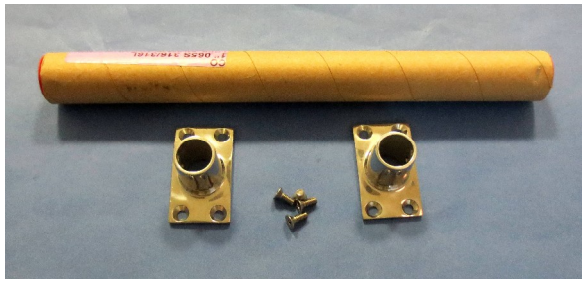
The display enclosure may be mounted using either of two methods. The usual mounting method is to use a rail mounting base on the back of the enclosure to connect it via the standoff pipe to a wall or to another structure. The mounting bases and pipe are supplied. An optional method is to mount the display box using the same type of mounting tabs used for the control box. This mount is only suitable when the display box is mounted against a concrete or wood frame wall.

It is important that the Display Enclosure not be mounted directly against a metal wall, controls enclosure, or other metal surface. Make sure the power switch is turned ON after installation.

The height of the display should be such that all affected persons can easily see it (usually 8' to 10' from the ground). The cover should be locked to protect from any unauthorized access. Once installed, turn the battery isolation switch on.



Display Box



Rail Mounting Base Kit

During operation, should the unit lose power, two internal backup batteries will power the unit for up to six hours, depending on the level of storm activity. Both of the batteries are charged during normal operation.

The system should be hooked to the AC power source for 10 hours before operation to fully charge the batteries. The battery in the alert box is disconnected for shipping purposes. This battery must be reconnected during installation for proper operation. Open the cover on the alert box enclosure and reconnect the red battery terminal.

Alert Box Installation

The alert box can be mounted to any flat surface using the plastic tabs that are supplied with the unit. Details of the alert box are shown below. Wear ear protection when connecting the cable to the alert box in case of accidental initiation of the alert.

Alert Box

Alert Box Connector

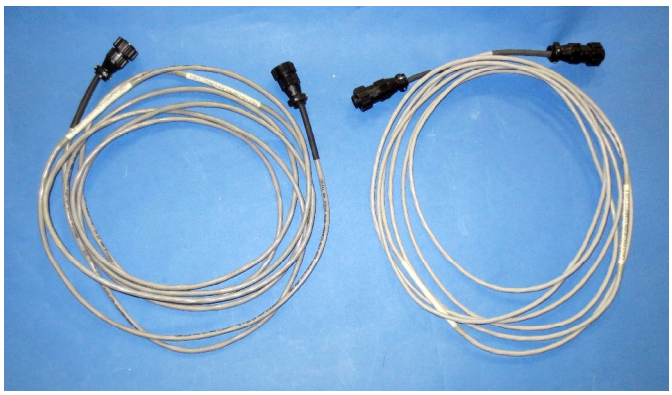
Alert Box with Mount Flanges

Interface Cables

There are two cables, each 16’ long. The cables have no orientation requirement, and each will fit only one set of connectors on the boxes. Each cable has a label indicating which boxes it connects together.

The cable with the 8 pin connector connects the Control Box to the Display Box.
The cable with the 4 pin connector connects the Display Box to the Horn Box.
Turn the locking collar tight after installation to insure a secure connection.

Different cable lengths can be specially ordered by contacting Xtreme Research.



Interface Cables

Cables are Labeled

2. Operation

Theory of Operation

Field Pro detects the characteristic electromagnetic emissions from individual lightning strikes, uses patented technology to determine the distance to the detected strike, and displays that data to the user. The distances are indicated in the display box by four sets of range LEDs: 0-3 miles (red); 3-8 miles (Yellow); 8-20 miles (blue) and 20-40 miles (green). This allows you to track the approach of dangerous storm activity. The alert horns can be turned on or off depending on the type of situation (ie. visual only or visual and audio). The horn sounds for one second when a strike is detected at or closer than the alert range, and the appropriate range indicator LED will continue to blink for one minute.

Turn the Unit ON and OFF – the POWER button

Pressing the POWER button (RED center) turns the unit on or off. When the Field Pro is turned on, all of the indicators cycle once, beginning with the 0-3 range indicator in the display box and ending with the POWER indicator in the control box. This allows the user to be certain that all indicators are functioning. After several seconds, the POWER indicator will begin to blink, indicating normal operation. Once the unit is running, any button pressed will sound the horn.

The Field Pro is programmed to automatically turn off if no buttons are pressed for a period of 5 hours. This automatic turn off feature can be deactivated by using the “Constant ON” setting described below.

Turn the Audible Alert ON and OFF – the TONE button

The unit starts with the audible alert disabled and the TONE indicator off. After the system has done a self check and all of the LEDs have stopped blinking (except for the POWER LED), pressing the TONE button turns on the audible alarm. Ear protection should be worn by those working with the system. The alert sounds for a second when the TONE switch is pressed. This is a fixed time interval and can not be changed.

The blinking green TONE LED indicates that the alert is activated. Pressing the TONE button again turns the audible alert off, and the horns will sound for one second. Turning the audible alert on or off does not alter LED operation.

Setting the Alert Range – the RANGE button

The RANGE button allows you to choose the distance at which detected lightning strikes will trigger the audible alert. To set the alert distance, press the RANGE button repeatedly until the desired range category LED in the display is on. Wait for 3 seconds and this range will be memorized by the unit. To change the alert range, repeat this process. When the RANGE button is initially depressed the alert will sound.

Determining a safe range is a subjective matter. By combining the RANGE button and the TONE button you may provide the warning that is appropriate for your situation. Please see "Facts about Lightning and Thunderstorms" below to help determine when it is safe to resume activities.

Set Constant ON – the BAT SAVE button

After the unit has powered up successfully and the POWER LED is blinking, pressing the BAT SAVE button twice in quick succession disables the automatic five hour turn-off feature. To indicate this setting, the POWER LED stays on without blinking and the alert sounds once. If the alert has been turned on, the TONE indicator LED will continue to blink.

3. Care and Maintenance

The Field Pro has been manufactured of the highest quality materials and components. It should operate properly for years with minimum maintenance. A few important tips will maximize the operational life of your Field Pro.

The Field Pro carries an IP54 rating when properly installed with all cables attached, meaning that is weather-resistant but not waterproof. The Field Pro boxes are not air tight and should never be immersed in water. After installation, as the boxes heat up and cool down, air will be drawn in or forced out and humidity may occasionally condense on the clear front panels. This is not harmful and may be removed by opening the box front and drying off the panel with a micro-fiber towel.

The Field Pro is a sensitive electronic instrument and should never be dropped or subjected to high impact forces.

The Field Pro Control Box is intended to be the only Field Pro component routinely opened. The buttons are long-life components that should not fail during the lifespan of the unit.

The other Field Pro boxes are not intended to be opened except to replace the internal batteries. This is a rare occurrence, about as often as replacing a car battery – each three to five years. Opening the case will void the Product Warranty unless explicitly authorized by Xtreme Research.

4. Facts about Lightning and Thunderstorms

Thunderstorms and the associated lighting cause an average of 200 deaths and many more injuries in the U.S. every year. Most of these deaths and injuries could be prevented by the warning provided by Field Pro.

The average lightning strike is 5-6 miles long. A lightning strike is incredibly powerful; up to 30 million volts at 400,000 amps flow in less than 1/10 of a second.

The average thunderstorm is 6-10 miles wide and moves at a rate of 25 MPH. Many lightning strike deaths and injuries occur with clear skies overhead from lightning strikes originating in the storm's overhanging anvil cloud. Once the leading edge of a thunderstorm is within 10 miles, you are at immediate risk from lightning.

On average, thunder from a lightning strike can be heard over a distance of 3-4 miles, depending on the terrain, humidity and background noise. By the time you can hear the thunder, the storm is already 3 – 4 miles away and you are at risk.

The sudden cold wind that many people use to gauge the approach of a thunderstorm is the result of down drafts, and usually extends less than 3 miles from the storm's leading edge. By the time you feel the wind, the storm can be less than 3 miles away.

Approximately 100,000 thunderstorms occur in the U.S. each year. About 10% of all thunderstorms are severe enough to produce high winds, flash floods and tornadoes.

IMPORTANT
There are two types of lightning produced by a thunderstorm, cloud-to-ground and cloud-to-cloud. For any user on the ground, the cloud-to-ground is the most dangerous. The Field Pro is designed to detect cloud-to-ground lightning strikes. While it may detect cloud-to-cloud lightning strikes, there may be occasions where storms will produce cloud-to-cloud lightning strikes that are not detected by the Field Pro. User should therefore still exercise extreme caution when exposed to lightning storms.

5. Warranty, Service and Support

Xtreme Research Corporation, SkyScan Division, P.O.Box 336, Port Richey, FL 34673-0336 will repair or replace this product for one year from the original date of purchase absolutely free. This warranty does not include physical damage to the unit or any of its accessory items and does not cover damage to the Field Pro unit resulting from the use of accessori es not manufactured or authorized for use by Xtreme. Modifications or repairs by unauthorized service personnel will void this warranty. You are responsible for all shipping charges to Xtreme Research. Xtreme Research will pay for UPS ground transport back to you.

NO OTHER WARRANTY, EXPRESSED OR IMPLIED HAS BEEN MADE OR WILL BE MADE WITH RESPECT TO THE UNIT, AND NO PERSON IS AUTHORIZED TO PROVIDE ANY OTHER WARRANTY IN CONNECTION WITH THE SALE OF OUR PRODUCTS BEYOND THE DESCRIPTION ON THE FACE HEREOF. IMPLI ED WARRANTIES, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO ONE YEAR FROM THE DATE OF ORIGINAL PURCHASE.
XTREME RESEARCH CORP. RESERVES THE RIGHT TO CREATE PERFORMANCE MODIFICATIONS OR IMPROVEMENTS ON ITS' PRODUCTS WITHOUT INCURRING THE OBLIGATION TO INSTALL THE CHANGES ON UNITS PREVIOUSLY SOLD, DELIVERED OR SERVICED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. XTREME RESEARCH CORP'S LIABILITY SHALL BE LIMITED TO THE COST OF REPAIR OR REPLACEMENT OF THE UNIT AND XTREME RESEARCH CORP. SHALL IN NO EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTI DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

Service

This Service Policy is valid in the United States only. This applies to Field Pro units returned to our factory in Clearwater, FL and is subject to change without notice.

SkyScanUSA reserves the right to deem any product unserviceable when replacement parts are no longer reasonably available. After the original warranty period, a standard service charge will be assessed for each repair (physical damage and missing parts are not included).

Please call our Customer Support Department to verify the service charge for you unit and obtain a Returned Materials Authorization (RMA) number. No work will be performed on the unit if it is returned without an RMA number.
The standard service charge includes UPS Ground or Parcel Post freight only. If charges are not prepaid, the unit will be returned C.O.D. Repairs are warranted for ninety (90) days. Return units for repair to

Nova Research and Engineering, Inc.
ATTN: Skyscan Coordinator
11930A 44TH ST N
CLEARWATER, FL 33762

6. Troubleshooting

The unit may be tested by placing the display box a foot or so from the back of an operating CRT (approximately 30K volts). A small stun gun may also be used with a one to one and a half foot separation from the unit. A wait time of 10 seconds after turn on is necessary before initiating a high voltage signal. A wait time of 60 seconds is necessary between successive tests.

If the unit fails to alarm, turn it off, restart, wait the appropriate time, then retry. If the unit fails to start, call Xtreme Research for further information.

There are several types of stray signals that may trigger the system. These are natural and do not indicate a malfunction. Some of these are:

* A source of static in the near vicinity of the display; ie. electric drill, motor, spark plug (from an automobile), a CRT, etc.
* Static discharge from a human against the system may trigger it.
* A severe and very close lightning strike may overload the system and even turn it off.
* If the system is off, a severe or very close lighting strike may turn the system on.
* High intensity lighting systems may also trigger the system.