



COMPASSPRO

APPLICATION

SPECIFICATIONS

COMPASS Pro™ by Safeguard Equipment® offers an integrated software application & service to accompany the PVCD hardware device.

Software Application Specifications for the Safeguard Equipment® App When Used In Conjunction With the COMPASS Pro™

Introduction

The COMPASS Pro emergency response solution developed by Safeguard Equipment presents the latest technology integrated into a Personal Voltage and Current Detector (PVCD): an App that provides an interactive software-based communications interface for emergency response. This latest innovation also enables emergency location detection, provides field-strength graphics for both voltage (electrical field) and current (magnetic field), as well as giving the user additional tools for setting and monitoring the hardware device.

The software interface works in conjunction with functions on the COMPASS Pro hardware device to provide additional protections to line workers, telecom workers, arborists, and others who face the risks of electrocution, electric shock, burns, or fall injuries due to exposure to high voltage lines or other energized sources, and/or due to working at heights.

The purpose of this paper is to outline the use and utility of the software interface, or App, as it relates to the COMPASS Pro hardware device.

The COMPASS Pro™

The COMPASS Pro is the newest device in the COMPASS line of PVCD's from Safeguard Equipment. The COMPASS Pro differs from all other PVCD's on the market in terms of the features it offers, and, even apart from the Safeguard Equipment software interface, features the most

advanced and comprehensive technology available in providing personal protection to workmen whose jobs may expose them to the dangers presented by energized lines. The COMPASS Pro device offers the following physical, operational, and safety features.



Physical Features

- It is worn by clipping onto a standard hard-hat, but can also be clipped onto a shirt.
- The device weighs less than one ounce, and measures 3.0 x 1.4 x 0.9 inches.
- It operates off of a rechargeable 3.7V/250 mAh Lithium-Polymer (LiPo) battery. It fully recharges in approximately 1.5 hours on a USB 2.0 Micro B (5V) charger.
- Battery life is approximately 40 hours; less when alerts are repeatedly activated. The device indicates when battery charge is low.
- It is fully operational in virtually any weather conditions: IP-67 water-resistance rating; temperature rated for -20 degrees C to 60 degrees C (-4 degrees F to 140 degrees F).

Operational Features

- Directional information for voltage detection: the red LED lights will light up in sequence, indicating the direction in which the source lies.
- Users can opt for any one of eleven different sensitivity settings, allowing a user who works around energized sources to only receive alerts when within a given range.
- Smart Adaptive Mode allows the user to receive warnings only whenever the unit detects an increase in the ambient electrical or magnetic field either due to a change in the field or when a user moves close to an energized source.
- When activated, the device emits both an audible warning as well as a visual warning, indicated by color-coded LED lights.
- The device offers both voltage detection (electrical field) as well as a current detection (magnetic field). The type of field detected is indicated by the color of the LED signal.
- 360 degree range of detection.
- Audible alerts may be muted.
- Ability to detect magnetic fields (current) even when shielded by non-ferrous barriers, including earth (i.e. buried lines).

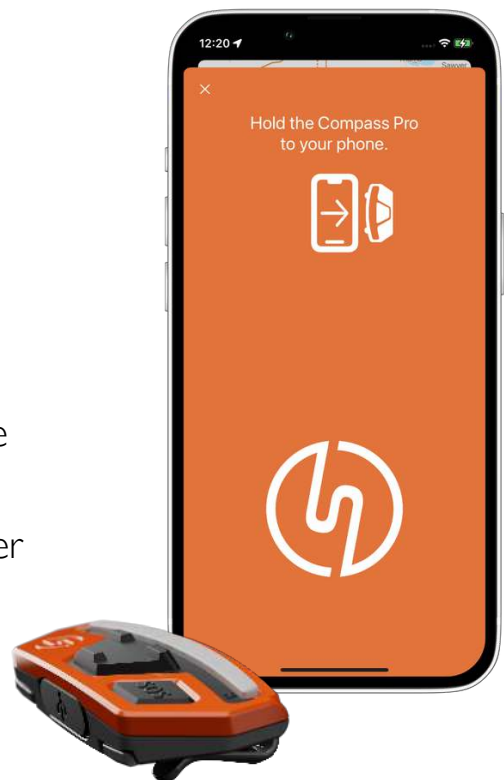


SAFETY FEATURES

- SOS call: this button on the device enables the user to signal that help is needed. Activation requires a 5-second hold, to eliminate the likelihood of accidental activation. This feature is only effective when the device is linked to the Safeguard Equipment app and within range of cell-phone service.
- Arc-flash detection: the device has a UV sensor that detects specifically the light wavelengths of arc flashes, which are generally not found in other natural light sources.
- Fall and impact detection: the device is equipped with an accelerometer, which will detect both when a worker falls wearing the device, as well as when there is an impact.
- No-Movement/Man-Down detection: when the device has detected an SOS, arc-flash, fall, or impact, it will continue to monitor to determine whether any subsequent movement is detected.

Safeguard Equipment App Interface for the COMPASS Pro

The software app interface is a communications platform designed to optimize the utility of the safety features outlined above. In addition, it will provide users with software-based methods of utilizing and setting the operational features of the device. The safety features of the COMPASS Pro must be used in conjunction with the App in order to be fully functional. In addition, the COMPASS Pro and accompanying App are Bluetooth® enabled, and fully functional only if the user is within cell service range.



App Installation

The App works with both iOS (Apple) and Android (Google) devices (cell phones). To use it, the Safeguard Equipment app must be downloaded onto the phone. The user will need to create a personal account and provide basic information that sets up the safety network: personal identification information, a unique company code, and emergency contact details based on the company's emergency response notification protocol. Certain features will then have to be enabled, including location sharing detection (activated only when an alert is triggered), which will be used to dispatch emergency services. After setting up the App, you will need to pair your phone with the hardware unit.

Expanded Operational Features

Once the phone and device are paired, the App can be used to enhance the operational features of the hardware device. Many of these features can be accessed from the device itself; however, the App provides a more user-friendly, plain-language method of making device adjustments. The App can be used to:

- Display (graphically) voltage and current readings from the device
- Adjust the sensitivity settings for both voltage and current alerts
- Update firmware for the device
- Change the voltage detection range for the device, from LV (120V - 2.5kV), to MV (2.4kV to 3.5kV), to HV (3.5kV to 500kV)
- Activate/deactivate the Smart Adaptive Mode
- Check battery life

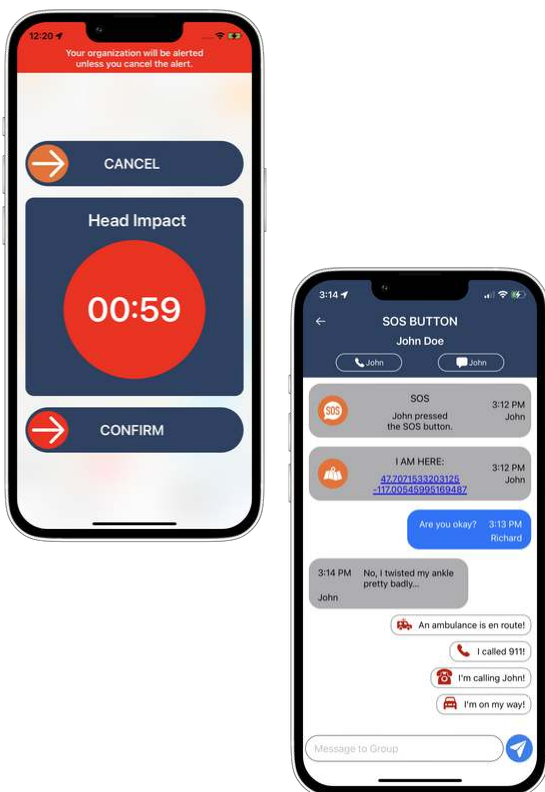
These operational adjustments are helpful in utilizing the features of the COMPASS Pro unit, but the App's primary value is in enhancing and implementing the safety features.

Full Implementation of Safety Features

From the paired phone, the user can determine which safety features to enable:

- Arc-flash detection
- Fall detection
- Impact detection
- Location Sharing (enabled only when there is an emergency event)

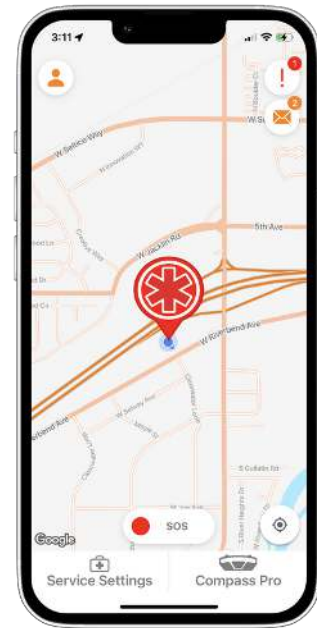
As with some of the operational features, the SOS safety features can be accessed directly from the App as well as the device. This will send an immediate alert to the emergency response team, so long as the user is within cell-phone service range.



Anytime an alert is triggered by detecting an adverse event, the device will begin a 60-second countdown, during which the user can cancel the alert. After that period, the App will notify the designated response team, which is determined by the contacts input during App set-up. The notification will indicate the basis for the alarm; for example, that the unit has detected an arc flash or an impact. The App screen will suggest pre-programmed responses for the user, such as "Send an

Ambulance," "False Alarm," or "I Need Help." The user then only has to touch the appropriate response message to notify the response team to take the designated action.

At all times, the user can notify the response team of a false alarm, or that no further emergency response is needed. The pre-set screen also has a “Dial 911” button, which will summon assistance immediately without the need to go through the internal response team. Whenever assistance is requested, the notification will enable the location services feature, which will provide accurate geo-location information to first responders as well as to the response team.



Through the App, the response team has access to information about what the device has detected (e.g., arc flash, fall, or impact), as well as geo-location information and the user’s responses, if any. Set up much like a text thread, notifications are recorded and time stamped in a “chat” that enables the user to communicate with the response team when able.

If the device detects an arc-flash, fall, impact, or no-movement, and the user does not respond within a 60-second time-frame or respond to any prompts, the response team can initiate a call to 911 services. For all emergency response communications, the data is time-stamped to assist all parties in knowing the exact time of an adverse event. In this way, the response team can convey to 911 services the location of the party that needs assistance, the exact time of the injury event, and the likely nature of the injury, based on what the hardware unit has detected.

Conclusion

The COMPASS Pro emergency response solution represents a revolutionary advancement in providing an additional and much-needed level of protection to linemen, telecom workers, and others who are exposed to the dangers of electrical and fall hazards.

The COMPASS Pro is designed to provide a solution to emergency and crisis situations by both preventing electrical accidents as well as establishing a streamlined emergency response protocol for companies and workers who work with energized lines.

The COMPASS Pro emergency response solution provides a simple-to-use and practical solution for workers out in the field to be assured that, should an adverse event occur, they will receive timely medical assistance. The ability to shorten emergency response times for these types of events has a material impact on their survivability. The goal of the COMPASS Pro and all Safeguard Equipment products is to reduce to the extent possible the risk of death and serious injury to workers.