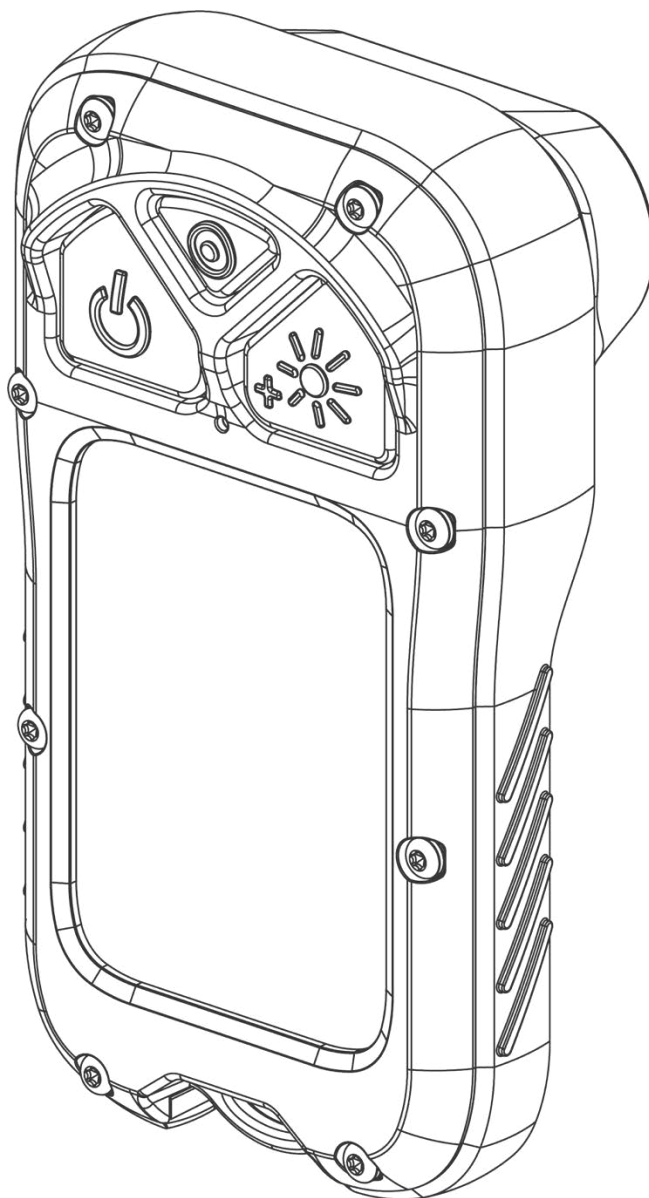


## User Manual

# Reveal<sup>™</sup> 300

## Thermal Imaging Camera



Oct 2024  
REV 2

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# **1 Introduction**

Thank you for choosing Seek Thermal. The Reveal 300 is a dependable situational awareness thermal imaging camera designed for situational awareness, personal safety, and recreational use. We hope you find this thermal imaging camera to be the most efficient and effective tool for your everyday use at your professional and personal use.

## **1.1 How to use these instructions**

Ensure that each person who uses the product has read and understood this user manual before using this product.

Follow all the instructions. Keep all safety information and instructions for future reference and pass them on to subsequent users of the product.

Seek Thermal is not liable for cases of material damage or personal injury caused by incorrect handling or non-compliance with this user manual. In such cases, the warranty will be voided.

For more information contact:

Seek Thermal Inc.

6300 Hollister Ave

Santa Barbara

CA 93117

[www.thermal.com](http://www.thermal.com)

[www.thermal.com/support](http://www.thermal.com/support)

## **1.2 Intended use and reasonably foreseeable misuse**

This product is intended to be used as a situational awareness, personal safety aid, and recreational tool. Never become wholly dependent on the thermal imager for personal navigation. It is not a substitute for proper safety training.

The product may only be used in accordance with the instructions described in this manual. Any use other than those described in this manual is considered as non-intended use. This will also invalidate the warranty.

### **1.3 Online documentation**

We update our user manuals regularly. The latest version of the documentation is available at [www.thermal.com/support](http://www.thermal.com/support)

### **1.4 Other languages**

This is the English user manual. Manuals in other languages are available upon request.

## 2 Quick Start Guide

Please refer to the following to start using the product right away:

1. Before first time use, charge the Reveal 300 using the supplied charging dock for 3.5 hours or until the charge screen indicates full battery.
2. Push the Power button to turn the camera on. The camera will start imaging within 7 seconds.
3. Aim the front of the camera lens toward the scene of interest.
4. To change color palettes; press and release the Power button quickly.
5. To change modes; press and hold the Flashlight button for more than 3 seconds.  
The modes will cycle through in the following order: Basic, Center Spot, Survey. A center spot icon will appear in the center of the screen when in Center Spot and the background palette will be light blue when in Survey mode. Please refer to the Camera Modes section for detailed descriptions.
6. To turn flashlight ON/OFF; press and release the Color/Flashlight button.
7. To capture images; press and release the Media Capture button. To capture video; press and hold the Media Capture button for 2 seconds. A red recording icon will appear on the bottom left of the screen. Press the Media Capture once to turn off video recording.
8. To transfer image and video files, connect the dock to a Windows or MAC computer.
9. To change the temperature units between Fahrenheit and Celsius, insert the tip of a pen into the pin hole situated between the Power button and Color/Flashlight button.

## 3 Getting To Know Your Reveal 300

### 3.1 What's included in the box

- Thermal Imaging Camera
- Charging Dock
- USB-C to USB-A Cable
- Hook and Loop Retaining Strap
- Durable Quick Start Guide
- Safety Information Booklet

### 3.2 Equipment ratings

<b>Battery Material</b>	Lithium-ion
<b>Nominal Voltage</b>	3.6 V
<b>Nominal Capacity</b>	3500 mAh
<b>Environmental</b>	Intended for wet locations (camera) Intended for outdoor use (camera) Intended for indoor use (charger) 10 ~ 95 % RH, non-condensing Overvoltage Category OCV: 1 Pollution Degree 2
<b>Altitude</b>	Camera: 5000m. Desktop: 5000m (Warning: Overall altitude is dependent upon the altitude rating of the AC/DC adapter used to provide the 5Vdc source).
<b>Operation and Storage Temperature</b>	Storage: -20°C to +60°C During discharge: -20°C to +60°C During Charge: 0°C to +45°C
<b>Charger Input Rating</b>	5VDC, min 1.0A (USB Type C connection) Only for use with a USB AC/DC charger or USB computer host with a 5Vdc output which is rated LPS or Class II.
<b>IP Rating</b>	IP67 (camera), IP20 (charger)

### 3.3 Camera elements

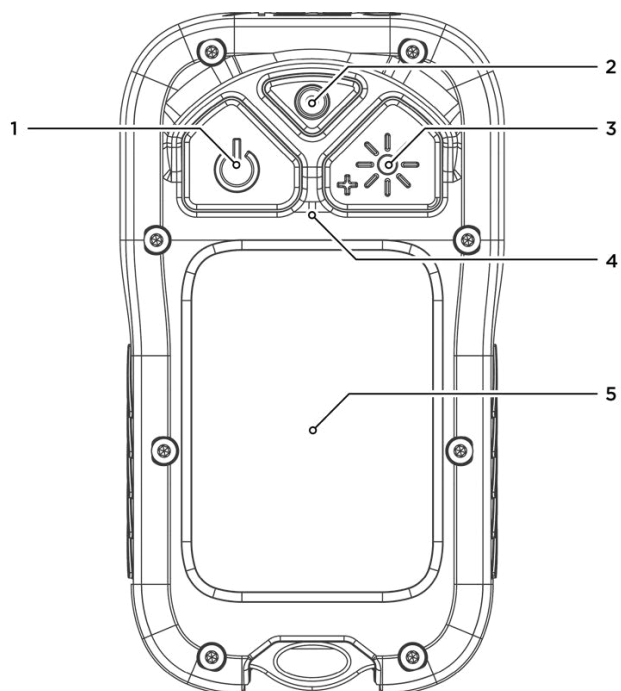


Figure 1 – Front camera view

1. Power On / Off
2. Image and Video capture
3. Flashlight / Color selection
4. °F to °C unit change button
5. 320 x 240 LCD display

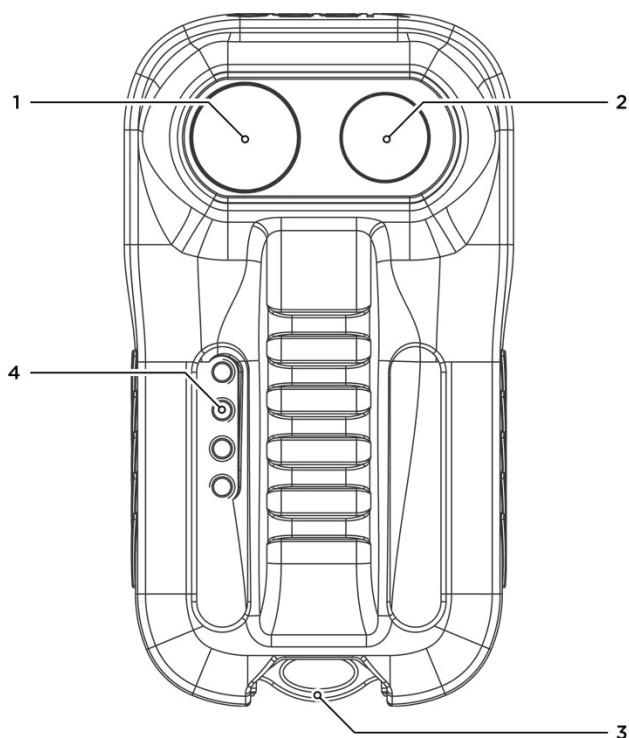
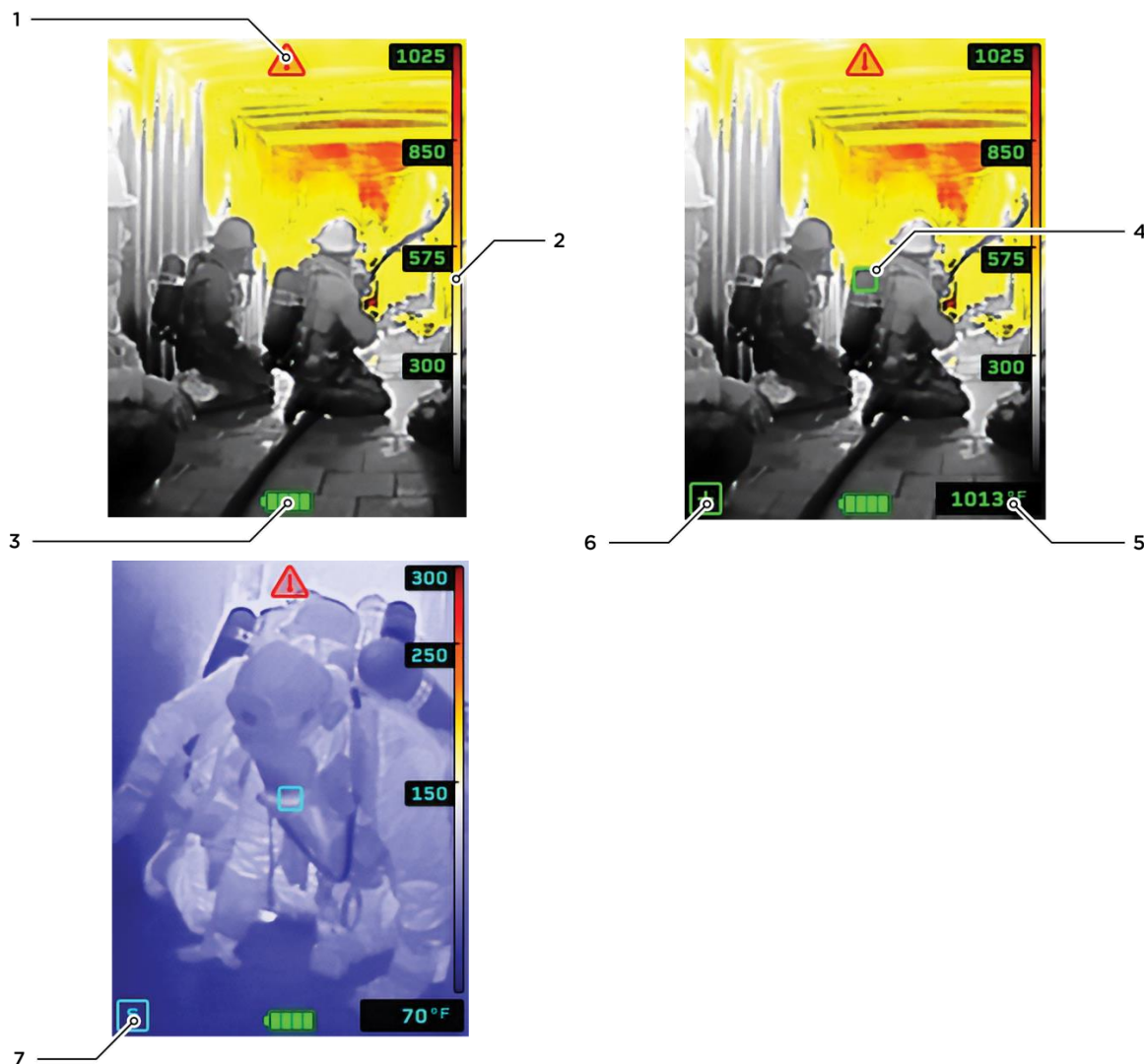


Figure 2 - Rear camera view

1. LED flashlight
2. Thermal imaging sensor and lens
3. Lanyard attach point (sold separately)
4. Charging contacts

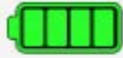




### 3.4 Screen elements



1. The over temperature indicator provides a visual warning that the thermal imaging camera is close to the overheating of internal components. The camera should be moved to a cooler location.
2. The Battery status indicator.
3. Center Spot reticle. The location where the Center Spot temperature measurement reading comes from in the active scene.
4. Temperature reading inside of the Center Spot. Using the camera's Center Spot and Survey modes may require additional training.
5. Survey Mode icon. Indicates that the extra features of Survey mode are enabled; Using the camera in Survey mode may require additional training.
6. Color reference temperature bar.



### 3.5 Battery status indicator (operational)

Battery Status:	
	> 75% charge remaining
	> 55% charge remaining
	> 25% charge remaining
	< 25% charge remaining
	< 5min remaining when flashing

## 4 Operation and Use

### 4.1 Charging the device

1. Place the charging dock on a suitable stable surface.
2. Plug the USB cable into a safe power block (not provided) or computer USB port.
3. Place the Reveal 300 with the screen facing upwards and the charging contacts facing downwards into the dock.
4. The screen on the Reveal 300 will indicate battery status within a few seconds.



Figure 3 - Camera and charging dock

#### **NOTICE**

Charge time for a fully depleted battery is 3.5 hours.

#### **NOTICE**

Charging the camera using a computer may take considerably longer than using a separate USB power block.

#### **NOTICE**

The charger is suitable for indoor use only.

Clean the charging contacts periodically. See Section 5 for more information.

#### **CAUTION**

This desktop charger is intended to be mounted on a flat and stable surface in a suitable location where there is no risk of physical impact or acceleration forces.

## 4.2 Camera modes

The camera has 3 thermal imaging modes.

1. Basic
2. Center Spot
3. Survey



Basic



Center Spot



Survey

Basic mode shows a basic thermal image.

Center Spot mode adds in a Center Spot overlay and the active temperature of the object in the active scene that the camera is pointed at.

Survey mode is dedicated towards finding heat that could lead to a fire. The fixed color palette indicates colors by temperature. Normal temperatures are indicated from dark blue to white, while higher temperatures start to appear in yellow, orange, and then red colors starting at 150°F (65°C) to 300°F (149°C).

### NOTICE

See Section 6 for more information on training and additional resources.

### 4.3 Image capture

To save an image to the camera's internal memory:

- 1 Press and release the Media Capture button.
- 2 A white flash will appear on the screen, notifying the user that an image has been saved.

#### NOTICE

The number of images that can be captured is dependent on the combined total size of videos and images saved. Images will be deleted on a first-in-first-out basis, i.e. when the memory is reaching full capacity, the oldest image will be deleted.

### 4.4 Video capture

To record a video clip to the camera's internal memory:

- 1 Press the Media Capture button for 2 seconds.
- 2 A red RECORD icon will appear on the screen, notifying the user that the camera is recording a video clip.

To stop a video:

- 1 Press and release the Media Capture button.
- 2 The red RECORD icon will disappear from the screen, notifying the user that the camera has saved the video clip.

#### NOTICE

The camera will continuously record until the user stops video recording or powers down the device. The camera will save each video file in 5-minute clips.

#### NOTICE

The storage capacity is 4GB which is approximately 1 hour of video recording time.

#### NOTICE

The number of video files that can be recorded is dependent on the total combined size of videos and images saved. Videos will be deleted on a first-in-first-out basis, i.e. when the memory is reaching full capacity, the oldest video file will be deleted. Please ensure you periodically transfer video files from the device to a computer.

## 4.5 Connecting the camera to a computer

Place the camera on the charging dock and connect the USB cable to a Windows or MAC computer.

Reveal will appear as a removable drive.

To transfer images and videos:

- 1 Enter the DCIM folder on REVEAL
- 2 Copy and paste videos / images to the folder of your choice on your computer.
- 3 Eject the REVEAL from the computer.

## 4.6 Updating your camera

Periodically, Seek Thermal will release product improvements or enhancements in the form of firmware updates. Visit <https://support.thermal.com/> to check for the latest firmware version. To check the current Firmware version:

1. Connect your camera to a Windows or MAC computer
2. The firmware version will be displayed on the USB connect screen under "Firmware Version"
3. The number will display in the following format: 37.27.x.x

If your current firmware version has a lower number than the version currently online, please update your camera using the following procedure:

1. Connect your camera to a Windows or MAC computer
2. Download the latest Firmware
3. Drag the THERMAL.STR file onto the Reveal device
4. Wait approximately 10 seconds
5. Eject the camera from your computer
6. Remove the camera from the dock and power the device on
7. Wait 5 seconds, the camera will then begin to update
8. A green tick will indicate a successful Firmware update

### NOTICE

The file name will be in the format: THERMAL.STR

Please ensure the file name is in this format. Firmware update will fail if this format is not retained.

## 5 Maintenance and cleaning

The Reveal 300 thermal imager requires little maintenance. For best care, please follow the guidelines below:

- When not in use, the thermal imager should be stored in an average room temp of 23°C (73°C) and kept clear from potential physical damage.
- If company or department information is added to the thermal imager, ensure that you do not cover the original product labels or markings, the thermal imager lens, flashlight window, the functional buttons, or the display.
- To clean the camera housing, a soft cloth with warm water only and a mild detergent can be used. Do not use solvents to clean the camera.
- To clean the lens and flashlight, a commercial lens cleaning solution with more than 30% isopropyl alcohol may be used with a soft cloth. Gently use the cloth on the lens, as the lens has a delicate anti reflective coating.
- Do not allow any liquids or debris to enter the battery compartment, and make sure the battery compartment is closed when handling the device around dirty or contaminated environments.
- Decontamination: please make sure the camera is thoroughly cleaned, decontaminated, and disinfected before sending it to your reseller or Seek Thermal for service. Contaminants include chemical fire extinguishing compounds, radioactivity, biohazardous materials, and residues from chemical fires
- Seek Thermal reserves the right to charge the full cost for the decontamination and disinfection of cameras that are shipped to our service department.

## 6 Training

Basic familiarity and fire service use case examples are provided on the Seek Thermal website at [www.thermal.com](http://www.thermal.com)

### **NOTICE**

Read and understand this entire manual. Training and practice are required before using this equipment in a hazardous situation. Use of a thermal imager without proper training may place the user at higher risk in dangerous situations which could result in serious injury or death.

### **WARNING**

The following is not, nor is it intended to be, an exhaustive list of behaviors of infrared energy that differ from visible light. Use of this thermal imaging camera must be part of a complete training program. Interpretation of the thermal image requires training and experience. Do not use this product if you have not been thoroughly trained in its use and operation. Use of this product without proper training and thorough understanding of its operation may cause errors in judgment based on misinterpretation of the thermal imaging information, which could result in serious injury or death. The training must include extensive practice with the thermal imager in a variety of non-hazardous and hazardous environments to develop a complete understanding of how to interpret the thermal image. The user must be able to distinguish between relatively harmless and potentially hazardous sources of heat. The user must also be able to distinguish between actual sources of heat and reflected images of heat sources. Because different brands and models of thermal imaging cameras may operate differently, always update training with each new piece of equipment.

Before entering a potentially hazardous situation, turn on and test the thermal imager to confirm it is operating properly. Failure to confirm the thermal imager is operating properly may place the user at higher risk in dangerous situations which could result in serious injury or death.

Beware of misconceptions about thermal imagers. Thermal imagers only show temperature differences between objects and not an optical image of the objects. The greater the temperature difference, the more distinct the thermal image. Experience and training are required to correctly interpret the thermal image.

- These are some other circumstances which could result in misinterpretation:
- The thermal imager cannot see through walls. A source of heat behind a wall will not be evident if it does not heat the wall itself.
- The heat from some high temperature objects or sources of high heat may be blocked, obscured, or made less distinct in the thermal image display by any of the following:
  - Water mist, spray, or highly saturated fog
  - Some chemical substances in a concentrated cloud or vapor
  - Extremely dense smoke
  - Heated smoke or a layer of heated gases
- If a concrete floor and a hole in that floor have the same temperature, there will be no apparent difference in the thermal image display to indicate the presence of the hole.
- Visually transparent or reflective materials such as glass, shiny plastic, or water can reflect infrared radiation from an actual source of high temperature. The user must be able to distinguish and identify when the image in the display could be a reflection and not the actual source of high temperature. For Example:
  - When viewing a window or other shiny surface at an angle, a source of high temperature reflected in the surface will be at some angle opposite and away from the apparent location.
  - When viewing a source of high temperature through a clear window with a thermal imager, the thermal imager display will only show a reflection of the user holding the thermal imager and not the source of high temperature behind the window.
  - When viewing a hole filled with water, the thermal imager display will show a reflection of any heat sources above and away from the water surface.



- Molten or boiling substances will appear hot in the thermal image display, but it may be difficult to identify their physical nature and the hazards they present based on the thermal image alone.
- Keep the lens clean while operating the thermal imager.
- Dirt or soot build-up on the lens will obscure or reduce the clarity of the thermal image. Wipe the lens with a glove or cloth as needed. Clean the lens thoroughly after use.
- Condensation on the lens of the thermal imager will also block the thermal energy and could make the display appear blurry or blank. Wipe the lens regularly to remove accumulated condensation. Use an approved anti-fog preparation on the lens to reduce the possibility of condensation on the lens.

## 7 Customer and Product support

For any questions or issues with the use of this product, do not hesitate to contact our customer support group at:

<https://support.thermal.com/>

### 7.1 Quality Assurance

The Quality Management System under which this product was developed and manufactured complies with the ISO 9001 Standard. Seek Thermal Incorporated reserves the right to make changes and improvements to any of the products without prior notice.

### 7.2 Troubleshooting

#### WARNING

If you are experiencing problems with your product, please refer to this checklist. If the problem persists, please contact Seek Thermal Customer Services or your local distributor.

Error	Solution
Thermal imager will not turn on.	Ensure battery is fully charged.
Thermal imager switches off by itself.	Ensure battery is fully charged.
Battery will not charge.	Clean battery charging contacts.
Power is on but LCD is black.	Ensure no obstacles are impeding the view.
The image reflects the user.	Ensure no water or glass items are impeding the view.
The image appears blurred.	Ensure the lens window is clean.

## **8 Legal and Warranty**

### **8.1 Export Compliance**

The technology utilized in Seek Thermal imagers may be subject to export control regulation by the governments of the USA. Where an export license applies, once obtained by Seek Thermal on behalf of the customer, all parties must strictly adhere to the terms and conditions pertaining to that license.

Where an export license applies, a copy of the license will be provided to the end user, and the end user must agree to follow all license terms and conditions. As an indicative (but not exhaustive) guide, typical thermal imager End User License Standard Conditions are reproduced in the next section.

### **8.2 End User License standard conditions**

The end user must always maintain the Item in their possession and is responsible for its security against theft, loss, unauthorized access, or use.

No resale, donation, export, re-export, transfer, or disposal by other means of the Item is authorized. When the Item reaches the end of its service life, it **MUST** be returned to:

Seek Thermal Incorporated

6300 Hollister Avenue,

Santa Barbara, CA 93117

[www.thermal.com](http://www.thermal.com)

[www.thermal.com/support](http://www.thermal.com/support)

Sale, resale, loan, or surrender of the Item for any reason is prohibited.

The maintenance of the Item is limited to routine preventative maintenance and installation of field replacement parts only. Disassembly and/or repair of

electrical/mechanical assemblies must only be performed by Seek Thermal authorized personnel.

If the Item is lost, stolen, or destroyed, or unauthorized people have access to it, this must be reported to Seek Thermal within 21 days. The report must include a description of the incident, to include as appropriate:

- Who had physical possession of the item
- What is being done to recover the item
- Police incident report number
- Steps taken to prevent another such event.
- If unauthorized personnel had access to the Item, who allowed this and what has been done to avoid recurrence.

The end user must agree to all conditions set forth in the export license by signing said conditions and returning the signed export license to Seek Thermal prior to shipment of the Item.

### **8.3 Disclaimer**

Specifications subject to change without further notice. Models and accessories are subject to regional market considerations. License procedures may apply. Products described herein may be subject to US Export Regulations. Please refer to [thermal.com/support](https://thermal.com/support) with any questions.