Warranty

Will-Burt warrants its Night Scan Scout positioner to be free from defects in material and workmanship for a period of two (2) years, with such time period running from the date of shipment by Will-Burt. Will-Burt warrants its Night Scan Scout X200 lights to be free from defects in material and workmanship for a period of five (5) years, with such time period running from the date of shipment by Will-Burt. Will-Burt shall not be responsible for any damage resulting to or caused by its products by reason of failure to properly install, maintain or store the product; use of the product in a manner inconsistent with its design; unauthorized service, alteration of products, neglect, abuse, accident, or acts of God. This warranty does not extend to any component parts not manufactured by Will-Burt; provided, however, Will-Burt’s warranty herein shall not limit any warranties by manufacturers of component parts which extend to the buyer.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, AND NO REPRESENTATIONS, GUARANTEES OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, A WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT ARE MADE BY WILL-BURT IN CONNECTION WITH THE MANUFACTURE OR SALE OF ITS PRODUCTS. NO EMPLOYEE, DISTRIBUTOR, OR REPRESENTATIVE IS AUTHORIZED TO CHANGE THIS WARRANTY IN ANY WAY OR GRANT ANY OTHER WARRANTY ON BEHALF OF WILL-BURT.

Claims for defects in material and workmanship shall be made in writing to Will-Burt within thirty (30) days of the discovery of defect. Failure to provide notice as required hereby shall be conclusive evidence that the product was in conformity with the warranty, and Will-Burt shall be released from any and all liability relating to the product. Will-Burt may either send a service representative or have the product returned to its factory at Buyer's expense for inspection. If judged by Will-Burt to be defective in material or workmanship, the product will be replaced or repaired at the option of Will-Burt, free from all charges except authorized transportation.

THE REMEDIES OF BUYER SET FORTH HEREIN ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER REMEDIES. THE LIABILITY OF WILL-BURT WHETHER IN CONTRACT, TORT, UNDER ANY WARRANTY, OR OTHERWISE, SHALL NOT EXTEND BEYOND ITS OBLIGATION TO REPAIR OR REPLACE, AT ITS OPTION, ANY PRODUCT OR PART FOUND BY WILL-BURT TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP. WILL-BURT SHALL NOT BE LIABLE FOR COST OF INSTALLATION AND/OR REMOVAL, OR BE RESPONSIBLE FOR DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE.
# Document History

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<th>Dates</th>
<th>Remarks</th>
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<tr>
<td>TP-5509201-00</td>
<td>12/28/2017</td>
<td>Initial Release</td>
</tr>
<tr>
<td>TP-5509201-A</td>
<td>4/11/2018</td>
<td>Corrected Figure 2-9</td>
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Safety Summary

This section describes safety precautions for the Night Scan Scout. These are recommended precautions that personnel must understand and apply throughout installation, operation, and maintenance. Be sure to read and understand the entire manual, and contact The Will-Burt Company with any questions, before performing any procedure outlined in this manual.

Signal Word Definitions

Per the ANSI Z535.4 standard, the following signal words and definitions are used to indicate hazardous situations:

- **DANGER** indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.
- **WARNING** indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.
- **CAUTION** indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It is also used to alert against unsafe practices.

General Safety Instructions

The following are general safety precautions that are not related to any specific procedures. These are recommended precautions that personnel must understand and apply throughout installation, operation, transportation, maintenance, storage, and troubleshooting. Additional precautions that apply to specific procedures and steps may be listed with the procedure or step to which they apply.

**Electrocution Hazard**! Do not touch live wires. Make sure all power has been disconnected prior to performing installation or maintenance. Make certain that the area is free of overhead power lines and other unwanted sources of electricity. Do not operate the system during an electrical storm. Follow OSHA safety regulations when working near energized power lines. Be sure to allow sufficient clearance on all sides of the mast to allow for side sway. Death or serious injury could result if proper precautions are not performed.

**Safety Instruction – Lightning**! Lightning protection is not part of this system. A proper means of electrical grounding should be provided. Failure to observe this warning could result in death or serious injury.
Resuscitation! Personnel working with or near high voltages should be familiar with modern methods of resuscitation. Such information may be obtained from the Bureau of Medicine and Surgery, United States Navy.

Pinch Point Hazard! Keep clear of moving parts. Be sure to stay clear of the Scout during operation. Moving parts can crush and cut resulting in serious injury.

Crush Hazard! Do not stand directly beneath the Scout or payload. Be certain payload is properly installed and secured. In locations or areas where the risk of injury occurs, or any part of the assembly may become detached or fall for any reason, a strong safety chain or wire hawser should be attached between the equipment and the mounting surface. At all times, normal safety precautions must be employed. Death or serious injury could result if Scout fails suddenly.

Safety Equipment! Helmets or hard hats, eye protection, gloves, and safety shoes or combat boots must be properly worn while working in the deployment area. Death or serious injury could result if proper safety equipment is not properly worn.

Trained Personnel Only! Installation, operation, and maintenance to be performed by trained and authorized personnel only. Death or serious injury could result if proper installation, inspection, operation, and maintenance procedures are not observed.

Lifting Hazard! Manually lifting over 55 lb. (25kg) is prohibited. In the UK, all lifting equipment must be thoroughly examined annually by a competent person according to the Lifting Operations and Lift Equipment Regulations 1998. Equivalent regulations exist in other EU states.

Safety Instruction – Remote Control! The equipment is subject to remote control and may be operated at any time. Persons working on the equipment should take appropriate precautions to ensure that any unexpected movement does not occur as this could lead to injury.

Safety Instruction – Impact Loading! Utilize a safety tether to secure the payload in the event of impact loading. The tether should connect to the Scout mounting pedestal or other rigid structure. Death or serious injury could result if proper precautions are not performed.

Safety Instruction – Do not look at lights! Do not look directly into lights when they are illuminated. Temporary impairment or permanent vision damage could occur.
Equipment Damage! All persons installing and maintaining this equipment should be suitably qualified and work to national and local standards and codes of practice.

Equipment Damage! Each Scout contains a 1.85 amp self-resetting circuit breaker to protect the PC board. Do not disassemble the Scout side plates, or separate from the pedestal. Doing so will break the environmental seal and potentially cause improper stop limit settings. This will void the warranty.

Safety Instruction – High Pressure Spray! Do not expose the Scout to high pressure spray. Equipment damage may occur.
(This page is intentionally left blank.)
Section 1 Introduction

Review this manual in its entirety. Contact The Will-Burt Company with any questions before performing any procedure outlined in this manual. The views depicted in this manual are provided for clarification and are subject to change without notice. Views are not to scale.

This manual describes installation, operation, and maintenance procedures for the Night Scan Scout (P/N: 723012101). These procedures assume the use of the standard catalog Night Scan Scout. Procedures and characteristics for Night Scan Scouts customized to meet customer-specific needs may vary.

See www.willburt.com for information on these and other Will-Burt products.

The Night Scan Scout:

- Is a Remote Controlled LED Spot/Flood Light
- Provides 40,000 lumens of light
- Can be powered directly from the vehicle without need of a generator

1.1 Safety Precaution Notification

Refer to the Safety Summary for precautions to be observed while installing, operating, or maintaining this equipment.

1.2 Manual Organization

This manual is organized into the following sections:

- Section 1 Introduction
- Section 2 Installation
- Section 3 Operation
- Section 4 Maintenance
- Section 5 Extended Glossary of Terms
1.3 Definitions of Terms
Throughout this manual, the following terms are used:

- “Home Position” to refer to the position the Scout is in when it is at the mid-point of both the pan and tilt. In this position, the tilt platform is horizontal and the pan axis is centered. In the Home Position, the rear of the Scout is the side facing the side egress on the mounting pedestal. Note that the offset to the left of the Scout, as you face the side egress, is wider than the offset to the right. The Scout ships in the Home Position.

![Home Position](image)

- “Remote Controller” to refer to the wireless remote controllers used to operate the Night Scan Scout.
- “Scout” to refer to the positioner and lights.
- “System” to refer to the entire Night Scan Scout system (Scout, Control Box, Wireless Remote Controllers, Power Converter, Nightscan Cable, and Power Cable).

See Section 5 for an Extended Glossary of Terms used within this manual.
1.4 Specifications

Specifications for the Night Scan Scout are described as follows:

- Scout Specifications (Table 1-1)
- Control Box Specifications (Table 1-2)
- Remote Controller Specifications (Table 1-3)
- Power Converter Specifications (Table 1-4)

Table 1-1 Scout Specifications

<table>
<thead>
<tr>
<th>Functional Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Lumens</td>
<td>40,000</td>
</tr>
<tr>
<td>Height</td>
<td>10 Inches (254 mm)</td>
</tr>
<tr>
<td>Width</td>
<td>20 Inches (508 mm)</td>
</tr>
<tr>
<td>Depth</td>
<td>5.5 Inches (140 mm)</td>
</tr>
<tr>
<td>Approximate Weight</td>
<td>36.5 lb. (16.5 kg)</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>-4°F to 122°F (-20°C to 50°C)</td>
</tr>
<tr>
<td>IP Rating (Lights)</td>
<td>IP69K</td>
</tr>
<tr>
<td>IP Rating (Positioner)</td>
<td>IP68</td>
</tr>
<tr>
<td>Pan Axis (Rotation)</td>
<td>400° (±200°)</td>
</tr>
<tr>
<td>Tilt Axis</td>
<td>180° (±90°)</td>
</tr>
<tr>
<td>Pan Speed (Proportional)</td>
<td>1 to 12° / Second</td>
</tr>
<tr>
<td>Tilt Speed (Proportional)</td>
<td>1 to 12° / Second</td>
</tr>
<tr>
<td>Maximum Continuous Power</td>
<td>263 Watts</td>
</tr>
<tr>
<td>Maximum Running Current</td>
<td>21.9 Amps</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>12 VDC (24 VDC and AC Options Available)</td>
</tr>
<tr>
<td>Backlash</td>
<td>&lt; 0.15°</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>2400</td>
</tr>
</tbody>
</table>

Note:
- All dimensions and specification are provided for reference only and are not intended for vehicle design purposes.
- Specifications may be subject to change without notice.
### Table 1-2 Control Box Specifications

<table>
<thead>
<tr>
<th>Functional Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>2.2 inches (55.6 mm)</td>
</tr>
<tr>
<td>Width</td>
<td>10 inches (254 mm)</td>
</tr>
<tr>
<td>Depth</td>
<td>5.76 inches (146.3 mm)</td>
</tr>
<tr>
<td>Approximate Weight</td>
<td>3.2 lb. (1.5 kg)</td>
</tr>
<tr>
<td>IP Rating</td>
<td>IP68</td>
</tr>
<tr>
<td>Voltage</td>
<td>24 VDC</td>
</tr>
<tr>
<td></td>
<td>1.3 W</td>
</tr>
</tbody>
</table>

**Note:**
- All dimensions and specification are provided for reference only and are not intended for vehicle design purposes.
- Specifications may be subject to change without notice.

### Table 1-3 Remote Controller Specifications

<table>
<thead>
<tr>
<th>Functional Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>2.3 inches (59.2 mm)</td>
</tr>
<tr>
<td>Width</td>
<td>1.3 inches (32.7 mm)</td>
</tr>
<tr>
<td>Depth</td>
<td>0.3 inches (8 mm)</td>
</tr>
<tr>
<td>Approximate Weight</td>
<td>&lt; 0.1 lb. (&lt; 0.05 kg)</td>
</tr>
<tr>
<td>IP Rating</td>
<td>IP68</td>
</tr>
<tr>
<td>Supply Voltage (Minimum)</td>
<td>2.0 V</td>
</tr>
<tr>
<td>Supply Voltage (Typical)</td>
<td>3 V</td>
</tr>
<tr>
<td>Supply Voltage (Maximum)</td>
<td>3.3 V</td>
</tr>
<tr>
<td>Supply Current: Quiescent</td>
<td>&lt;1 uA</td>
</tr>
<tr>
<td>Supply Current: Transmitting</td>
<td>17 mA</td>
</tr>
<tr>
<td>Battery</td>
<td>CR2032</td>
</tr>
</tbody>
</table>

**Note:**
- All dimensions and specification are provided for reference only and are not intended for vehicle design purposes.
- Specifications may be subject to change without notice.
### Table 1-4: Power Converter Specifications

<table>
<thead>
<tr>
<th>Functional Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>2.9 inches (73.7 mm)</td>
</tr>
<tr>
<td>Width</td>
<td>8.3 inches (210.8 mm)</td>
</tr>
<tr>
<td>Depth</td>
<td>4.93 inches (125.2 mm)</td>
</tr>
<tr>
<td>Approximate Weight</td>
<td>3.25 lb. (1.47 kg)</td>
</tr>
</tbody>
</table>

**Note:**
- All dimensions and specification are provided for reference only and are not intended for vehicle design purposes.
- Specifications may be subject to change without notice.

### 1.5 Major Components

The major components of the system are:

- Scout
- Control Box
- Wireless Remote Controllers
- Power Converter (12 to 24 VDC)
- Nightscan Cable
- Power Cable
1.5.1 Scout

The Scout (Figure 1-2):

- Has X200 LED lights
- Is made of die-cast aluminum casing
- Uses stainless steel fasteners
- Has weather and dust proofing to an IP68 rating
- Is designed to minimize backlash
- Is upside-down capable
- Is configured to run on RS-485 data using Pelco D protocol
- Contains an internal tether to prevent the pan and tilt head from separating from the mast in the event of an impact load separating the pan and tilt head from the base

![Figure 1-2 Scout](image-url)
1.5.2 Control Box

The Control Box (Figure 1-3):

- Has an antenna with a 48 inch (122 cm) long cable
- Has weather and dust proofing to an IP68 rating
- Has a Power Button which can be used to turn the system on and off. When the system is powered on, a light around the Power Button will turn on. In typical operation, power can be left on, however the Power Button can be used to shut down power to the system in the event that the Remote Controllers are not readily available.

![Control Box Image]

1.5.3 Wireless Remote Controllers

The Night Scan Scout comes with two Wireless Remote Controllers.

The Remote Controllers:

- Control pan and tilt functions
- Control light function
- Have weather and dust proofing to an IP68 rating
- Use a CR2032 battery

![Wireless Remote Controllers Image]
1.5.4 Power Converter (12 to 24 VDC)

The Power Converter (Figure 1-5):

- Converts 12 VDC input to 24 VDC output for the positioner and lights
- Is connected between the customer-provide power supply and the Control Box

![Power Converter](image1.jpg)

Figure 1-5 Power Converter (12 to 24 VDC)

1.5.5 Nightscan Cable

The Nightscan Cable (Figure 1-6):

- Consists of two wires for power, two wires for data, and one wire for ground
- Is 40 feet (approximately 12.2 meters) long
- Ships hard wired to the side of the Scout
- Ships with flying leads to be installed inside the Control Box

![Nightscan Cable](image2.jpg)

Figure 1-6 Nightscan Cable
1.5.6 Power Cable

The Power Cable (Figure 1-7):

- Consists of two wires
- Is 30 feet (approximately 9.1 meters) long
- Ships with flying leads to be installed inside the Control Box and to the customer-supplied power

![Image of Power Cable]

*Figure 1-7 Power Cable*
(This page is intentionally left blank.)
Section 2 Installation

This section describes the installation of the system and provides general procedures that must be followed to ensure a successful installation. Use care to understand and follow all precautions while installing.

2.1 Pre-Installation Check

Before installing the system:

- Be sure to read and understand the entire installation procedure before beginning installation.
- Ensure that only a properly trained and qualified certified electrician performs electric installations and maintenance.
- All required tools are readily available.
- That the following warnings are understood and followed:

  **WARNING**

  **Mounting Structure Hazard!** Before installation, be certain the mounting structure is capable of resisting forces generated from all loading and environmental conditions including, but not limited to system size and weight, payload size and weight, sail size, and wind speed. Mounting the system to a structure unable to resist the forces generated from customer-specific loading scenario could result in death or serious injury and could damage the system.

  **WARNING**

  **Safety Instruction – Mounting Instructions!** Be sure to understand all mounting instructions. The mounting hardware must include proper means to resist vibration loosening such as thread-locking compound or locking hardware. Failure to follow mounting instructions can result in death or injury.

  **WARNING**

  **Trained Personnel Only!** Only trained and qualified personnel should perform installation, adjustments, and servicing. Only a properly trained and qualified certified electrician should perform electric installations and service. Death or serious injury could result if proper installation, inspection, operation, and maintenance procedures are not observed.

  **CAUTION**

  **Equipment Damage!** Ensure the electrical connections to the positioner are made properly to prevent water ingress into the positioner through the connections. Should water enter the positioner, extreme problems can occur.
2.2 Installation Equipment
Table 2-1 lists tools and materials recommended for installation.

<table>
<thead>
<tr>
<th>Recommended Equipment*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Protective</td>
</tr>
<tr>
<td>Safety Glasses</td>
</tr>
<tr>
<td>Hearing Protection</td>
</tr>
<tr>
<td>Hand Tools</td>
</tr>
<tr>
<td>Crimping Tools</td>
</tr>
<tr>
<td>Soldering Kit</td>
</tr>
</tbody>
</table>

* Note:
- Depending on the local, regional, and national standards and codes of practice, and the environment, additional personal protective equipment may be necessary.
- Depending on the system configuration, additional equipment, including but not limited to, electrical components such as wire, fuses, and circuit breakers, may be required.
- When disposing of any disposables or components, do so according to any applicable local, regional, and national standards and codes of practice.

2.3 Installation Hardware
Table 2-2 describes hardware that may be used during installation.

<table>
<thead>
<tr>
<th>Hardware *</th>
<th>Supplied By</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positioner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) High-Strength 3/8 Inch (M8) Bolts</td>
<td>Customer</td>
<td>Bolts should be sized to length to allow for the thickness of the pedestal, mounting surface, any spacers, and mounting hardware.</td>
</tr>
<tr>
<td>(4) High-Strength 3/8 Inch (M8) Nuts</td>
<td>Customer</td>
<td></td>
</tr>
<tr>
<td>Control Box</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) High-Strength #10 or M5 Bolts</td>
<td>Customer</td>
<td></td>
</tr>
<tr>
<td>(4) High-Strength #10 or M5 Nuts</td>
<td>Customer</td>
<td></td>
</tr>
<tr>
<td>Step Up Converter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) High-Strength #10 or M5 Bolts</td>
<td>Customer</td>
<td></td>
</tr>
<tr>
<td>(4) High-Strength #10 or M5 Nuts</td>
<td>Customer</td>
<td></td>
</tr>
</tbody>
</table>

* Unless otherwise indicated, the mounting hardware must include proper means to resist vibration loosening such as thread-locking compound or locking hardware. Torque all hardware as appropriate for its size and grade. Torque values in these instructions assume the use of the Will-Burt provided hardware. Depending on the specific installation application, all hardware may not be used. Additional hardware may be required for additional accessories, or customer-specific applications.
2.4 Installation Dimensions

This section describes installations dimensions as follows:

- Scout Mounting Hole Dimensions (Figure 2-1)
- Control Box Dimensions (Figure 2-2)

Dimensions are provided for reference only.

![Figure 2-1 Scout Mounting Hole Dimensions](image)
Note: The Antenna mounts in a ½ inch (12.7 mm) through hole.

2.5 Power Supply Requirements

The Night Scan Scout System is designed to be used with a 12 VDC power supply. For alternate power supply options, contact The Will-Burt Company.
2.6 Installation Quick Summary
The following is a quick summary of installation of the Night Scan Scout. Detailed instructions (Section 2.7) follow the quick summary.

In general, install the Night Scan Scout as follows:

1. Select a Suitable Mounting Location (Section 2.7.1)
2. Unpack the System (Section 2.7.2)
3. Secure the Scout (Section 2.7.3)
4. Secure the Control Box (Section 2.7.4)
5. Secure the Step Up Converter (Section 2.7.5)
6. Wire the System (Section 2.7.6)

2.7 Installation Detailed Instructions
The following are detailed instructions describing the installation of the Night Scan Scout. This section describes installing the system assuming the use of the standard plug (Figure 2-3).

These instructions assume the use of a 12 VDC power supply. For alternate power supply options, contact The Will-Burt Company.
2.7.1 Select a Suitable Mounting Location
To select a suitable mounting location, consider the following:

- The mounting structure must have sufficient room to mount the system and allow for full pan and tilt movement.
- The mounting structure must be level in all directions, solid, and capable of holding the forces required by the bolts. Check the strength and rigidity of the mounting structure where the system is to be attached. Be sure to take into consideration other external factors, such as wind or ice loading, when selecting a mounting location. Make sure that these external factors do not overload the system. Reinforce as necessary.
- Cables will eventually need route between the:
  - Scout and the Control Box
  - Control Box and Power Converter
  - Power Converter and Power Supply

2.7.2 Unpack the System
Unpack the System as follows:

1. Carefully open the box(es).
2. Inspect for any shipping damage. Notify the carrier if damage is evident.
3. Remove all components.

The Will-Burt Company recommends keeping the box(es) for transporting the system; for example, if shipping the Night Scan Scout back to the factory for refurbishment.

2.7.3 Secure the Scout
These instructions assume the mounting hole locations are not pre-drilled and that the Night Scan Scout components will be used as templates to drill these holes during installation. Alternatively, the mounting holes locations could be found and pre-drilled using the installation dimensions (Section 2.4). When pre-drilling the holes, use care to ensure the mounting holes properly align.

To secure the Scout:

1. Align the Scout to the desired mounting location.
2. Use the Scout as a template to mark the mounting hole locations. Ensure there will be enough clearance for the Scout to fully pan and tilt.
3. Remove the Scout and drill the mounting holes.
4. Realign the Scout in the desired mounting location ensuring the holes align and that the Scout is oriented as desired.

Note: The Scout ships in the Home Position. When in the Home Position, the rear of the Scout can be identified as the side of the Scout with the side egress in the mounting pedestal (Figure 2-4). As you face the side egress, the offset on the left side of the Scout will be wider than the offset to the right.

5. Connect the Scout to the top of the mounting surface with (4) high-strength ⅜ in. or M8 stainless steel bolts and nuts (customer supplied). Torque all hardware as appropriate for its material and size. The mounting hardware must include proper means to resist vibration loosening such as thread-locking compound or locking hardware.

### 2.7.4 Secure the Control Box

To secure the Control Box:

1. Secure the Control Box in place using four #10 or M5 SSTL bolts and nuts (customer supplied).

2. For optimal performance, fully extend the antenna. Coiling the wire negates the transmission signal. Secure the antenna in place through a ½ inch (12.7 mm) through hole.

### 2.7.5 Secure the Step Up Converter

Secure the Step Up Converter in place according to the manufacturer’s instructions.
2.7.6 Wire the System

This section describes the electrical installation of the system. In general, the system wires up according to Figure 2-5.

To wire the system:

1. Remove the lid to the Control Box (Figure 2-6).

2. Run the Nightscan Cable from the Scout to the Control Box.
3. Install the Nightscan Cable according to the wiring pinout and the numbers on the wires (Figure 2-7).

![Nightscan Cable Pinout](image1)

**Figure 2-7 Install the Nightscan Cable**

4. Run the Power Cable to the Control Box and install it according to the pinout.

![Cables Installed to the Control Box](image2)

**Figure 2-8 Cables Installed to the Control Box**
5. Install the Power Cable to the Power Converter (Figure 2-9).

6. Connect the customer-supplied power source to the Power Converter.

7. Re-secure the Control Box Lid.
Section 3 Operation

This section describes operation of the Night Scan Scout. Use care to understand and follow all precautions while operating.

3.1 Pre-Operation Check

Before operating the system, ensure:

- All operators read and understand the entire operation procedure and are properly trained.
- That the system is undamaged. If damage is apparent, do not use the system and have it serviced before use.
- All electrical cables are undamaged and all wiring connections are tight and appropriately connected.
- Any objects that might obstruct motion of the system, cause binding, or hinder system function are removed, and that the area around the pan and tilt region is clear so no damage will result from unexpected movement.
- The system is properly installed.
- Any transit tie-downs have been removed.
- The system areas is free of personnel.
- The operator has full view of the system during use.
- The Power Button on the Control Box is turned on. When the system is powered on, a light around the Power Button will turn on. In typical operation, power can be left on, however the Power Button can be used to shut down power to the system in the event that the Remote Controllers are not readily available.
- That the following precautions are understood and followed:

  **WARNING**

  **Tip Over Hazard!** Do not operate in high winds. Operate on level ground only. Stand clear of positioner and payload during operation. Be certain positioner is level and secure. System tip over could result in death or serious injury.

  **WARNING**

  **Safety Instruction – Operation!** For outdoor use only. Do not use in areas that have been classified as hazardous as defined in Article 500 of the National Electric Code.

  **WARNING**

  **Safety Instruction – Keep Clear!** Keep personnel clear of the positioner during operation.
Equipment Damage! Check for and remove any objects which might obstruct motion, cause binding, or hinder function of the system. Hitting obstructions will cause damage to the positioner.

Entanglement Hazard! Ensure cables are not tangled and are free to play out as the mast is extended. Tangled cables can cause equipment damage.

Safety Instruction – Operation! Lamps are extremely hot and should not come into contact with people or combustible and/or explosive materials. Do not operate if breakage occurs or unit is knocked over.

3.2 Operation Equipment

Table 3-1 lists recommended equipment for operation.

<table>
<thead>
<tr>
<th>Personal Protective</th>
<th>Recommended Equipment*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Glasses</td>
<td>Work Gloves</td>
</tr>
<tr>
<td>Work Gloves</td>
<td>Nitrile or Vinyl Gloves</td>
</tr>
<tr>
<td>Hearing Protection</td>
<td>Hard Hat or Helmet</td>
</tr>
<tr>
<td>Hard Hat or Helmet</td>
<td>Safety Shoes</td>
</tr>
</tbody>
</table>

* Depending on the local, regional, and national standards and codes of practice, and the environment, additional personal protective equipment may be necessary.
3.3 Controls

Figure 3-1 describes the Remote Controller buttons.

![Remote Controller](image)

**Figure 3-1 Remote Controller**

3.3.1 Pan and Tilt

The Pan and Tilt buttons are as follows:

- Pan Left (◄) which pans the Scout to the left.
- Pan Right (►) which pans the Scout to the right.
- Tilt Up (▲) which tilts the Scout up.
- Tilt Down (▼) which tilts the Scout down.

The Scout will continue to pan or tilt until the button is released.

Note: When operating the Scout, directions are given as shown in Figure 3-2.

![Scout Directions](image)

**Figure 3-2 Scout Directions**
3.3.2 Home
Pressing the Home (סמ) button will reposition the Scout at the mid-point of both the pan and tilt. In this position, the tilt platform will be horizontal and the pan axis will be in the center position. In the Home Position, the rear of the Scout is the side facing the side egress on the mounting pedestal. Note that the offset to the left of the Scout, as you face the side egress, is wider than the offset to the right. This is referred to as the Home Position (Figure 3-3).

To move to the Home Position, the Scout will pan and tilt simultaneously.

3.3.3 Toggle Lights
Pressing the Toggle Lights (💡) button once will:

- Turn the lights on if they are already turned off
- Turn the lights off if they are already turned on

3.3.4 Accessories
The accessories buttons (AUX 1 and AUX 2) are not currently supported.

3.4 Transportation
Before transporting the system, the system needs to be secured. Do not transport without the Scout stowed and secured. It is the responsibility of the customer to properly secure the payload and Scout when transporting the system.
Section 4 Maintenance

This section describes maintenance procedures required to keep the system operational. Use care to understand and follow all precautions while performing these procedures.

Safety Instruction – Operation! Make sure all power has been disconnected prior performing maintenance.

Make sure the lights are completely cool before attempting to clean the light lenses.

When re-lamping an installed fixture, make sure all power to fixture is off and that the fixture is cool.

4.1 Routine Maintenance

Maintain the Night Scan Scout as follows:

- Visually inspect to ensure the Scout is kept clean.
- Visually inspect for damage. If damage is apparent, do not use the Scout and have it serviced prior to use.
- Inspect to ensure all fixings and fastenings are tight. All fixings and fastenings must be thoroughly checked for tightness (1) month following installation, and thereafter at regular (6) month intervals.
- Inspect to ensure cables are undamaged and properly terminated. Cabling of the correct type as specified by national and local standards should be used. Cables should be checked for wear at (6) month intervals and replaced as necessary.
- Ensure no water can enter the Scout particularly through the connectors. Water can cause extreme problems with the Scout.

4.2 Replacement Parts

To order spare or replacement parts, contact The Will-Burt Company.
4.3 Remote Controller Battery Replacement

The Remote Controllers use a CR2032 battery.

To replace the battery:

1. Remove the screw holding the back panel in place.
2. Open the case.
3. Change the battery. Ensure you check the orientation.
4. Close the case.
5. Secure the back panel with the screw.
6. Dispose of the old battery according to any applicable local, regional, and national standards and codes of practice.
Section 5 Extended Glossary of Terms

This section describes general terms and abbreviations used within this manual.

- “Amp” stands for ampere which is a unit of electric current.
- “CD” stands for coefficient of drag.
- Home Position” stands for the position the Scout is in when it is at the mid-point of both the pan and tilt. In this position, the tilt platform is horizontal and the pan axis is centered. In the Home Position, the rear of the Scout is the side facing the side egress on the mounting pedestal. Note that the offset to the left of the Scout, as you face the side egress, is wider than the offset to the right. The Scout ships in the Home Position.
- “IP68” is an ingress protection rating.
- “IP69K” is an ingress protection rating.
- “LED” stands for light emitting diode.
- “Lumens” stands for total quantity of visible light.
- “Mounting Structure” is the overall structure where the Mast System is mounted.
- “Mounting Surface” is the surface to which the base of the mast is secured.
- “P/N” stands for Part Number. These are Will-Burt part numbers for various components in the Mast System.
- “Remote Controller” to refer to the wireless remote controllers used to operate the Night Scan Scout.
- “Scout” to refer to the positioner and lights.
- “System” to refer to the entire Night Scan Scout system (Scout, Control Box, Wireless Remote Controllers, Power Converter, NightScan Cable, and Power Cable).
- “Ø” stands for diameter.
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