



OWNER'S MANUAL

Handheld Wireless Controller for Model A704-5 Aviation Lights



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1.0 FCC Rules

NOTE: *This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off or on, the user is encouraged to try to correct the interference by one or more of the following measures:*

- *Reorient or relocate the receiving antenna.*
- *Increase the separation between the equipment and receiver.*
- *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
- *Consult the dealer or an experienced radio/TV technician for help.*

2.0 Introduction

2.1 Controller Overview

The A704-5 controller is made of rugged aluminum and includes a sealed backlit keypad and a 900 MHz transceiver. It is designed to withstand immersion and has been tested to MIL-STD-202G. The controller enables the same configuration and operation for the A704-5 light as the onboard, push-button interface (refer to A704-5 Owner's Manual for complete details), with the addition of the following capabilities:

Note: Do not use the A704-5 controller without the antenna attached or you will risk damaging the internal transmitter.

2.1.1 Grouping

The A704-5 controller allows A704-5 lights to be "grouped" for convenience, enabling configuration or operation instructions to be sent to any of eight predefined subsets of A704-5 lights, or all A704-5 lights. For example, a set of helipad lights can be configured as a group and therefore controlled independently from lights on a main landing strip.

2.1.2 ARCAL Compatible

When combined with an aircraft radio control of aerodrome lighting (ARCAL) system, the controller can be used to remotely operate the A704-5 via pilot-transmitted ARCAL protocols for deployment in unmanned airfields.

Contact your Carmanah representative for further details on the use of the controller with ARCAL systems and to learn which systems the controller is compatible with.

2.1.3 Battery Charge State and Charging

The controller is powered via an internal rechargeable battery pack. The controller battery level is indicated by three multicolored LEDs:

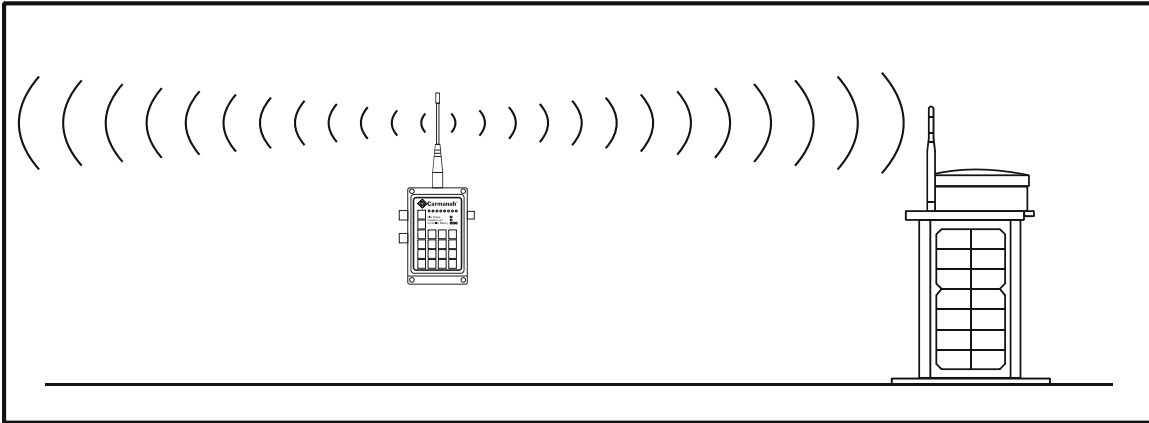
- Green indicates 75% or greater charge.
- Amber indicates charge level is between 50% and 74%.
- Red (solid) indicates that the battery level is below 50% and that the unit soon requires recharging.
- Red (flashing) indicates the battery level is critical.

A universal wall charger is included with each handheld controller. It is strongly recommended that the controller be fully charged each time it is plugged into the wall charger. This will maximize the useful life of the battery.

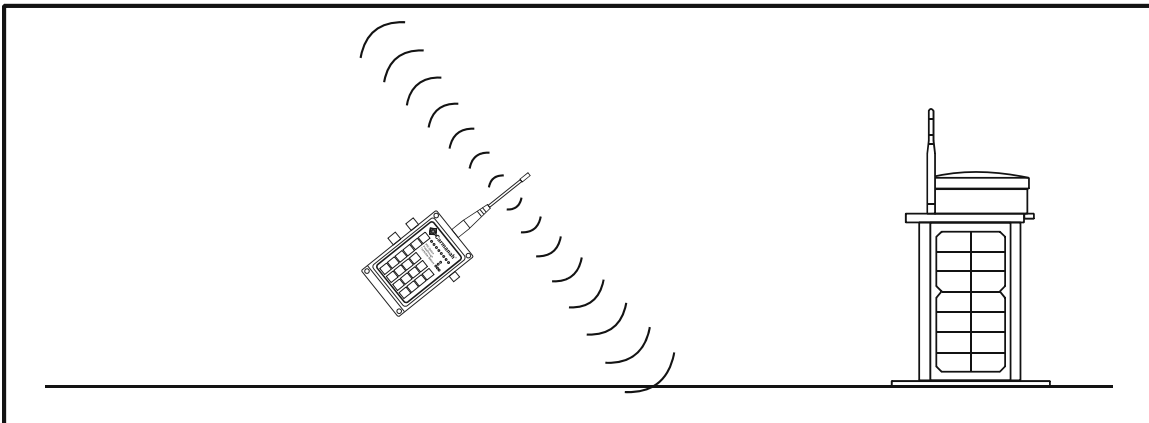
3.0 Controller Operation

3.1 Quick Start Operation Guide

Caution: The effective range of the transmitter is 4km for the 1 watt controller and ~2 km for the ½ watt controller, depending on the location. Therefore, there is the potential that all lights within this radius could be influenced by controller commands. The antenna's range is most effective when pointed 90° in relation to the lights. See the diagrams below for more detail.



Correct Orientation of Controller Antenna to Light



Incorrect (less effective range) Orientation of Controller Antenna to Light

3.1.1 Turning the Controller On

To start using the system, press the **CONTROLLER POWER** button. All LEDs on the control unit will flash briefly to verify they are functioning. After the LEDs flash briefly:

- The **CONTROLLER POWER** button green LED will light to indicate power is on
- **Active Groups** 1 through 8 should be lit.

Note: No commands are sent from the A704-5 handheld controller to the lights until the **ENTER** button is pressed and there will be a maximum one second delay before the lights respond to the command.

3.1.2 Autonomous Operation

To turn on the A704-5 (or group of A704-5 lights) in Autonomous Output mode:

- Press the **AUTO** button
- Press intensity level **LOW**, **MED**, or **HIGH**
- Press **ENTER**

Note: AUTO is an autonomous setting – once a group of lights are set in this mode, the lights will come on automatically every night at the programmed intensity level. They can be programmed day or night, however they will not come on in the daytime when programmed in the daytime.

Note: A704-5 lights in AUTO mode located near other lights (within 1 foot) may turn off due to the light emitted from them.

3.1.3 Temporary High-Intensity Operation

To turn on lights in **TEMP** mode:

- Press the **TEMP** button
- Press intensity level **LOW**, **MED**, or **HIGH**
- Press **ENTER**

Note: Lights set to temporary high-intensity operation using the controller will remain at this intensity for 15 minutes before returning to their previously set autonomous output mode.

3.1.4 Steady on vs. Flash Mode

Pressing the **FLASH** button will turn on/off Flash mode in any of the above modes. For example, to turn on lights in AUTO mode with flash:

- Press the **AUTO** button
- Press intensity level **LOW**, **MED**, or **HIGH**
- Press **FLASH** (turning the FLASH button LED on)
- Press **ENTER**

To turn off flash:

- Press **FLASH** (turning the FLASH button LED off)
- Press **ENTER**

3.1.5 Visible vs. Infrared Mode

Pressing the **IR** button will turn on/off Infrared mode in any of the above modes. For example, to turn on lights in IR TEMP mode:

- Press **TEMP** button
- Press intensity level **LOW**, **MED**, or **HIGH**

- Press the **IR** button (turning the IR button LED on)
- Press **ENTER**

Note: Only those A704-5 ordered with Infrared option will go into Infrared mode. Those A704-5 not ordered with infrared option will ignore this command and stay in Visible mode.

To turn off Infrared mode:

- Press the **IR** button (turning the IR button LED off)
- Press **ENTER**

3.1.6 Standby Mode

Standby mode turns off all lights until the next day-night transition. To go into standby mode:

- Press **STANDBY**
- Press **ENTER**

3.1.7 Emergency Mode

Emergency mode sets all lights in all groups to emergency flash. After 15 minutes, the lights will revert back to their previous autonomous state. To go into emergency mode:

- Press **EMERG/ALL** (All groups become Active)
- Press **ENTER**

To cancel emergency mode:

- Press **EMERG/ALL** (Clears the EMERG LED)
- Press **ENTER** (The previously selected groups become Active)

3.1.8 Turn Lights Off

To turn off lights:

- Press **LIGHTS OFF**
- Press **ENTER**

3.1.9 Clear

Pressing **CLEAR** deselects all selections pressed since **ENTER** was last pressed. The button LEDs will remain illuminated to display the state the lights of the currently active group are in (only if a single group is active on the controller)

4.0 Advanced Operation

4.1 Advanced Programming

4.1.1 ARCAL Mode

Aircraft Radio Control of Aerodrome Lighting (ARCAL) is achieved by connecting the controller to an ARCAL receiver and putting the controller into ARCAL mode. This controls the active group. While in ARCAL mode, the controller is locked out of system control; the controller can only be used to cancel ARCAL mode. To go into ARCAL mode:

- Press **ARCAL** (The ARCAL LED starts flashing)
- Press **ENTER** (The ARCAL LED is on, all lights in the active group turn off)

Note: While in ARCAL mode, a user can remotely control the lights with an ARCAL interface and set them to the 3 intensity settings (low, medium, and high intensity). After 15 minutes, the lights will turn off automatically.

To exit ARCAL mode:

- Press **ARCAL** (The ARCAL LED starts flashing)
- Press **ENTER** (The ARCAL LED is off)

4.1.2 Battery Diagnose Function

The Diagnose function sends a command to the lights to display a battery health indication. It works as follows:

To enter diagnose mode on the controller:

- Press **DIAGNOSE** (The DIAGNOSE LED starts flashing)
- Press **ENTER** (The DIAGNOSE LED is on)

To send the Diagnose command to the lights:

- Press (one of) **HIGH, MED, LOW** or **Lights Off**.
- Press **ENTER**

Lights within the following battery charge ranges will identify themselves to the remote operator by responding with five (5) flashes:

- **DIAGNOSE, HIGH:** 75% to 100% for high range
- **DIAGNOSE, MED:** 50% to 75% for medium range
- **DIAGNOSE, LOW:** 0% to 50% for low range (not including low battery state – see A704-5 Owner's Manual)
- **DIAGNOSE, Lights Off:** Low Battery State

To exit diagnose mode on the controller:

- Press **DIAGNOSE** (The DIAGNOSE LED starts flashing)
- Press **ENTER** (The DIAGNOSE LED is off)

4.1.3 Group Control

Any number of lights can be organized into one of eight groups and each group of lights can be controlled independently. This feature provides an added degree of flexibility in controlling a complete airfield lighting system. The controller sends commands to one or more groups indicated by the LEDs on the controller labeled "Active Groups." The factory default setting has all lights initially assigned to group one and any given light can be assigned to only one group at a time, however they can easily be reassigned to another group as required. To select one or more groups of lights to control:

- Press **SELECT GROUP**
- Press the group number(s) using the numeric buttons **1-8**
- Press **ENTER**

Note: Commands entered now apply only to the groups indicated by the Active Group(s) displayed.

4.1.4 Configure Groups (CONFIG)

To configure a subset of the lights as a group:

To enter configure mode on the controller:

- Press **CONFIG** (The CONFIG LED starts flashing)
- Press **ENTER** (The CONFIG LED is on)

Then send the Configure Group command to the lights:

- Press the number on the keypad corresponding to the group you wish to assign to specific lights using numeric buttons **1-8**
- Go to each individual light you wish to add to the selected group and press the switch on each unit. The light is now set to receive its group assignment. The light will remain "listening" for its group assignment for 5 minutes
- Press **ENTER** on the controller to assign the group

Note: Ensure that you do not use the switch on lights that you do not want in this group while the group assignment process is underway.

When you assign lights to groups, units that are already members of that group will remain members after the assignment process is complete. This means that you can add lights to a group as you go without having to re-assign all lights in the group.

Note: Any one light cannot be a member of more than one group.

When done configuring groups, exit configure mode on the controller:

- Press **CONFIG** (The CONFIG LED starts flashing)
- Press **ENTER** (The CONFIG LED is off)

Warning: The radio modem is a high-power 900 MHz unit. When transmitting any commands to the lights using the handheld wireless unit – ensure you are a minimum of two meters away from the nearest light. Due to the high power, if a light and the controller are too close the receiver in the light can be damaged.

4.1.5 Keypad Backlighting

The keypad is backlit and can be set to one of three different illumination options by pressing and holding the **CONFIG** button:

1. Low level illumination of indicator LEDs with backlight (for dark nighttime conditions).
2. Low level illumination of indicator LEDs with no backlight.
3. High level illumination of indicator LEDs with no backlight (for bright daytime conditions).

5.0 Service

Before contacting Carmanah's customer service, please have the serial number of your product available, a brief description of the problem, as well as all details of installation and recharging efforts.

5.1 Service

You can contact Carmanah's Customer Service Department by:

Mail:	Carmanah Technologies Corp. Building 4, 203 Harbour Rd. Victoria, BC Canada V9A 3S2
Phone:	+ 250-380-0052 1-877-722-8877 (Canada & U.S. Toll Free)
Fax:	+ 250-380-0062
Email:	customerservice@carmanah.com
Website:	www.carmanah.com