After LED connectors have been created in all gray LED wires, make the following connections using the connectors from the Guardian board J3 wiring harness:

· **J3 wiring harness:** *(> symbol = connect to)*

— LED1 (male) > LED 1 (female) coming from white Carmanah unit

— LED2 (male) > LED 2 (female) coming from white Carmanah unit

— LED3* (male) > LED 3 (female) coming from white Carmanah unit

*Some installations only feature two LEDs. If this is the case, disregard steps mentioning LED3.

— LED1 (female) > LED 1 (male) coming from white Carmanah unit

— LED2 (female) > LED 2 (male) coming from white Carmanah unit

— LED3* (female) > LED 3 (male) coming from white Carmanah unit

Step 7 – Install Door Switch (optional)

Please Note: *In order for the Guardian door-monitoring feature to work, a door switch must be ordered and correctly installed. Door switches do not come standard with Guardian Series Products, but can be purchased separately from RTC and shipped along with your order.*

The door switch needs to be installed in a position and location that allows the cabinet door to press in the switch "lever" when the cabinet door is closed and let off "lever" when the cabinet is open. This will vary from cabinet to cabinet, but typically the side of the inside lip of the cabinet works well.

Choose a location that follows the above guidelines and mount the door switch using a drill and the provided mounting screws. **The door switch for the GCR comes prewired to J4 of the Guardian board, so no additional wiring is required.**

Step 8 - Reconnect Power

After all components have been connected, restore power to the system by connecting the male connectors from the wires on each battery to the female connectors on the wires coming from the white Carmanah unit.
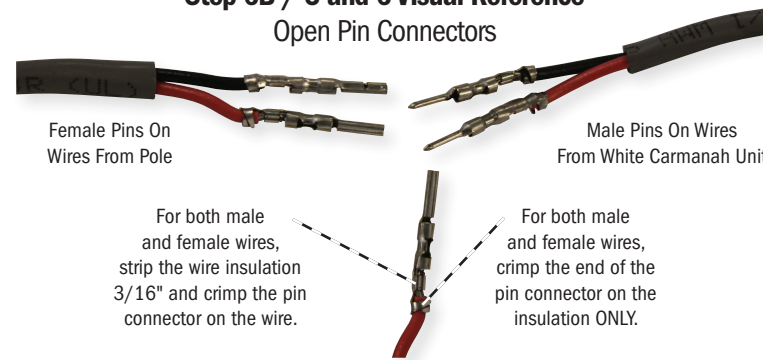
Step 9 - Setup Guardian Series Product in RTC Connect™

After the hardware installation is complete, the Guardian-Carmanah system must be set up in RTC Connect. Detailed steps can be found in the Quick Start Guide in RTC Connect. To access the guide, follow these steps:

1. Download and Open RTC Connect Software
2. Log In
3. Click on "Utilities" on the Left Toolbar
4. Select "Quick Start Guide"
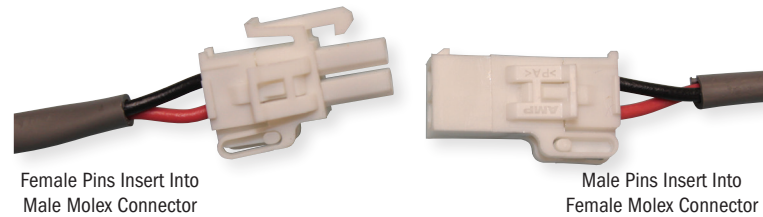5. Click on the "Adding A Guardian-Carmanah" title and follow directions

Step 6B / 5 and 6 Visual Reference
Open Pin Connectors

Female Pins On Wires From Pole

Male Pins On Wires From White Carmanah Unit

For both male and female wires, strip the wire insulation 3/16" and crimp the pin connector on the wire.

For both male and female wires, crimp the end of the pin connector on the insulation ONLY.

Step 6B / 7 and 8 Visual Reference
Molex Connectors

Female Pins Insert Into Male Molex Connector
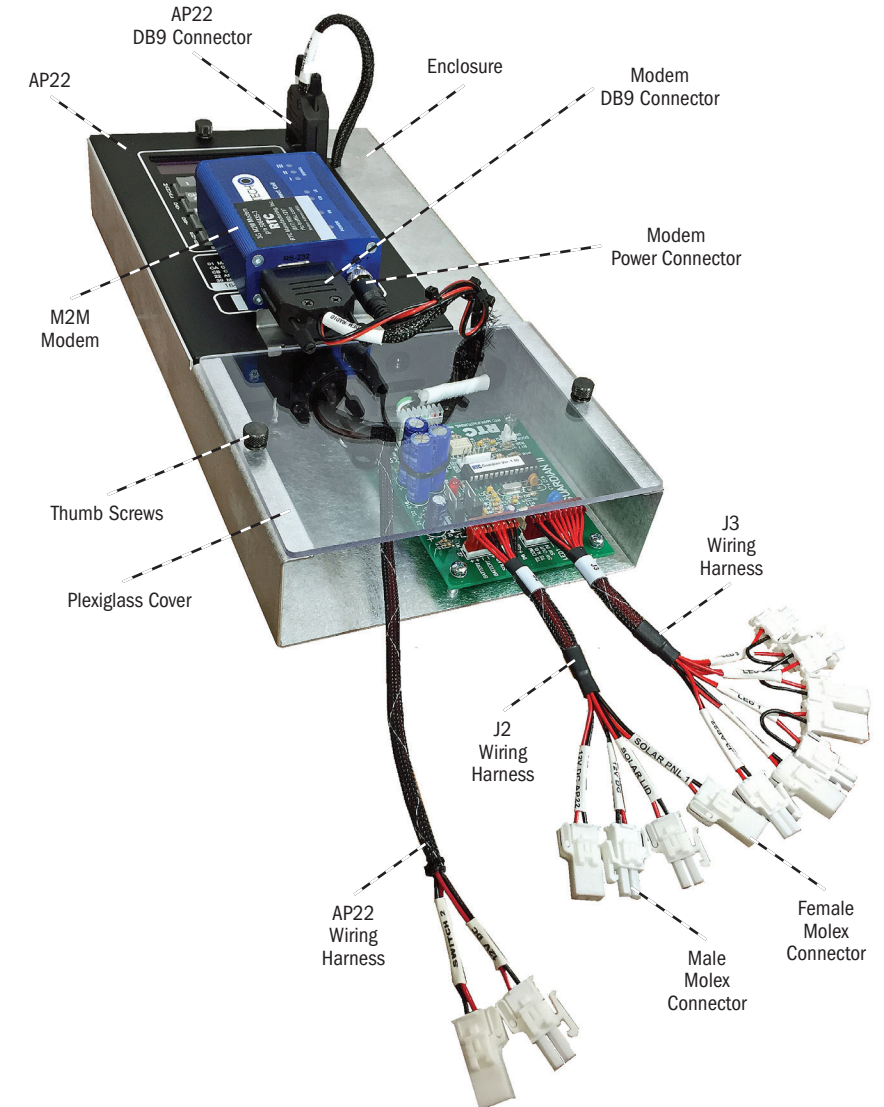
Male Pins Insert Into Female Molex Connector

Guardian-Carmanah Connection Guide

WIRE ORIGINATION LOCATION	WIRE LABELED	CONNECTS TO	WIRE LABELED	WIRE TERMINATION LOCATION
J2	SOLAR LID	>	unlabeled Solar Wire from	LidCabinet Lid
J2	SOLAR PNL 1	>	SOLAR PNL 1	White Carmanah Unit
J2	12V DC	>	12V DC	White Carmanah Unit
J2	12V DC AP22	>	12V DC AP22	AP22 Wiring Harness
J3	J3 AP22	>	J3 AP22	AP22 Wiring Harness
J3	SWITCH 2	>	SWITCH 2	White Carmanah Unit
J3	LED1 *(male connector)*	>	Gray LED Wire *(female connector)*	White Carmanah Unit
J3	LED2 *(male connector)*	>	Gray LED Wire *(female connector)*	White Carmanah Unit
J3	LED3* *(male connector)*	>	Gray LED Wire *(female connector)*	White Carmanah Unit
J3	LED1 *(female connector)*	>	Gray LED Wire *(male connector)*	Inside of Pole
J3	LED2 *(female connector)*	>	Gray LED Wire *(male connector)*	Inside of Pole
J3	LED3* *(female connector)*	>	Gray LED Wire *(male connector)*	Inside of Pole
J4	Door Switch *(optional)*	N/A	prewired	Door Switch

*Some installations only feature two LEDs.

GUARDIAN SERIES

Installation Guide for Guardian-Carmanah

AP22 DB9 Connector

AP22

Enclosure

Modem DB9 Connector

M2M Modem

Modem Power Connector

Thumb Screws

J3 Wiring Harness

Plexiglass Cover

J2 Wiring Harness

AP22 Wiring Harness

Female Molex Connector

Male Molex Connector

RTC │ RTC Manufacturing, Inc.

17165/030617

GUARDIAN SERIES

Installation Guide for Guardian-Carmanah

Please Note: *This Installation Guide is for the Guardian-Carmanah (GCR) of the Guardian Series Product Line. Please take the time to verify that this is the correct guide for your installation.*

Installation Guides for other RTC products can be found at RTC-Traffic.com/software.html.

Step 1 – Shipment Inventory and Supplies:

The Guardian-Carmanah (GCR) is shipped as a metal enclosure that contains a mounted Guardian circuit board. Already connected to the mounted Guardian circuit board should be a modem harness *(connected to J1)*, an 8-pin Carmanah wiring harness *(connected to J2)* and a 10-pin Carmanah wiring harness *(connected to J3)*. An optional addition to the GCR is a door switch that if purchased, comes prewired to J4 of the Guardian board.

Shipped along with the board and enclosure is an AP22-Carmanah wiring harness, two 10/32 phillips-head mounting screws, three male molex connectors, three female molex connectors, six male wire pins, and six female wire pins.

IMPORTANT! The Guardian-Carmanah system requires the use of an RTC AP22 time clock and M2M cell modem. If you purchased a new AP22 and cell modem with your GCR, you should see them mounted inside your GCR enclosure. If you did not purchase AP22/modem products along with your GCR and are not using existing RTC AP22/modem products, please contact RTC Manufacturing to order.

Along with the product inventory above, you will need the following tools:

- · Magnetic Phillips-head screwdriver
- · Wire strippers for 18 AWG
- · Wire cutters
- · Pin crimpers for 18 AWG *(not wire crimpers)*

Step 2 – Disconnect Power and Components

To prevent harm to product and self, safely disconnect the battery connections and power to the system before touching any other components.

After the batteries have been disconnected, locate the wires coming from the white Carmanah unit for batteries, solar panel 1, switch 1, switch 2, 12V DC, LED1, LED2 and LED3. Label both sides of all connections, if not already done. Then, disconnect all wire connectors. **If you do not see wire connectors for the LEDs, but instead see solid gray wires going from the white Carmanah unit down into the pole, do not cut or disconnect until told to do so in Step 6/Step 6B.**

Step 3 – Mount and Connect AP22 and M2M

Please Note: *Step 3 must be followed only if you are using existing AP22 and cell modem equipment. If you are installing a GCR with new AP22 and cell modem hardware, the connections below should already be made. Read the following step to confirm the connections before proceeding.*

Disconnect and remove all existing AP22 and cell modem hardware, wiring, and mounting materials from the cabinet.

Connect the round end of the new AP22 wiring harness (shipped with your GCR order) to the base of the AP22.

Mount the cell modem to the top of the AP22 using the modem mount.

Using the modem harness (connected to J1 on Guardian board), connect the round power cable to the power connector on the cell modem. Connect the DB9 connector labeled "modem" to the DB9 connection on the modem. Finally, connect the other DB9 connector labeled "time switch" to the DB9 connection at the top of the AP22.

Mount the AP22 to the GCR enclosure in the proper location using the screw on the enclosure and the slotted mounting hole on the back of the AP22.

Step 4 - Mount the Guardian-Carmanah Enclosure to the Cabinet

Unscrew the thumbscrews to the plexiglass cover. Using the Phillips-head screw driver and the provided screws, secure the GCR enclosure to the cabinet by turning the screws through the enclosure holes and into the two cabinet mounting holes above the left-side battery. The GCR enclosure is designed to be installed with the AP22 on the left side of the cabinet and the Guardian board on the right, with the wiring harnesses protruding into the middle of the cabinet. Replace plexiglass cover once mounting is complete, with the white wire protector facing the top left corner.

Step 5 - Connect the Guardian Board to the White Carmanah Unit and the AP22 Time Switch

Locate the J2 and J3 wiring harnesses on the Guardian board. Both harnesses consist of wires that have been labeled and have a white male or female molex connector at the end. The labels and gender connectors correspond with component wiring *(either new or disconnected in Step 2)* that have labels and opposite-gender connectors.

Use the labels and gender connectors to make the following component connections:

- · **J2 wiring harness:** *(> symbol = connect to)*
  - — SOLAR LID > unlabeled connector coming from lid of solar panel cabinet
  - — SOLAR PNL 1 > SOLAR PNL 1 *(coming from white Carmanah unit)*
  - — 12V DC > 12V DC *(coming from white Carmanah unit)*
  - — 12V DC AP22 > 12V DC AP22 *(coming from the AP22 wiring harness)*
- · **J3 wiring harness:** *(> symbol = connect to)*
  - — J3 AP22 > J3 AP22 *(coming from the AP22 wiring harness)*
  - — SWITCH 2 > SWITCH 2 *(coming from white Carmanah unit)*

Step 6 - Connect LEDs

Locate the grey wires that are coming from the white Carmanah unit. These wires connect directly to the LEDs.

In most Carmanah installations, you should find female molex connectors at the ends of the two or three gray wires coming from the white Carmanah unit and two or three male molex connectors at the ends of the gray wires coming from out of the pole. If this is the case, make the following connections using the connectors from the J3 wiring harness:

- · **J3 wiring harness:** *(> symbol = connect to)*
  - — LED1 (male) > LED 1 (female) coming from white Carmanah unit
  - — LED2 (male) > LED 2 (female) coming from white Carmanah unit
  - — LED3* (male) > LED 3 (female) coming from white Carmanah unit

    *Some installations only feature two LEDs. If this is the case, disregard steps mentioning LED3.
  - — LED1 (female) > LED 1 (male) coming from white Carmanah unit
  - — LED2 (female) > LED 2 (male) coming from white Carmanah unit
  - — LED3* (female) > LED 3 (male) coming from white Carmanah unit

Please Note: *If you do not see component connectors for the LEDs and instead see solid gray wires going from the white Carmanah unit down into the pole, follow Step 6 B.*

Step 6B – Creating LED Connectors

If the gray LED wires running from the white Carmanah unit down into the pole are solid and do not contain connectors, carefully follow these steps to create LED connectors:

1. **Gently** pull on gray wires to see if you can easily get the molex connectors in the pole to come back into the cabinet. If you can, go back to Step 6 and follow the steps. If not, continue below.

2. Cut one gray LED wire approximately 6 inches from the end that terminates at the white Carmanah unit.

3. Strip the gray insulation around the internal conductors approximately 1.5 inches back from both sides of the cut LED wire.

4. Strip the black and red wires approximately 3/16" back on both sides of the cut LED wire.

5. Using pin crimpers, attach the provided male pins to the stripped ends of the black and red wires that are coming from the gray LED wire that ends at the white Carmanah unit. See visual reference on back panel.

6. Using pin crimpers, attach the provided female pins to the stripped ends of the black and red wires that are coming from the gray LED wire that goes down into the pole. See visual reference on back panel.

7. Place and push the male pins into a white **female** molex connector. The pin on the black wire should go into the hole on the side with the hinge on the end of the molex connector and the pin on the red wire should go into the other hole. See visual reference on back panel.

8. Place and push the female pins into a white **male** molex connector. The pin on the black wire should go into the hole on the side with the connector clip and the pin on the red wire should go into the other hole. See visual reference on back panel.

9. Repeat Steps 1-8 for each solid gray LED wire in the cabinet