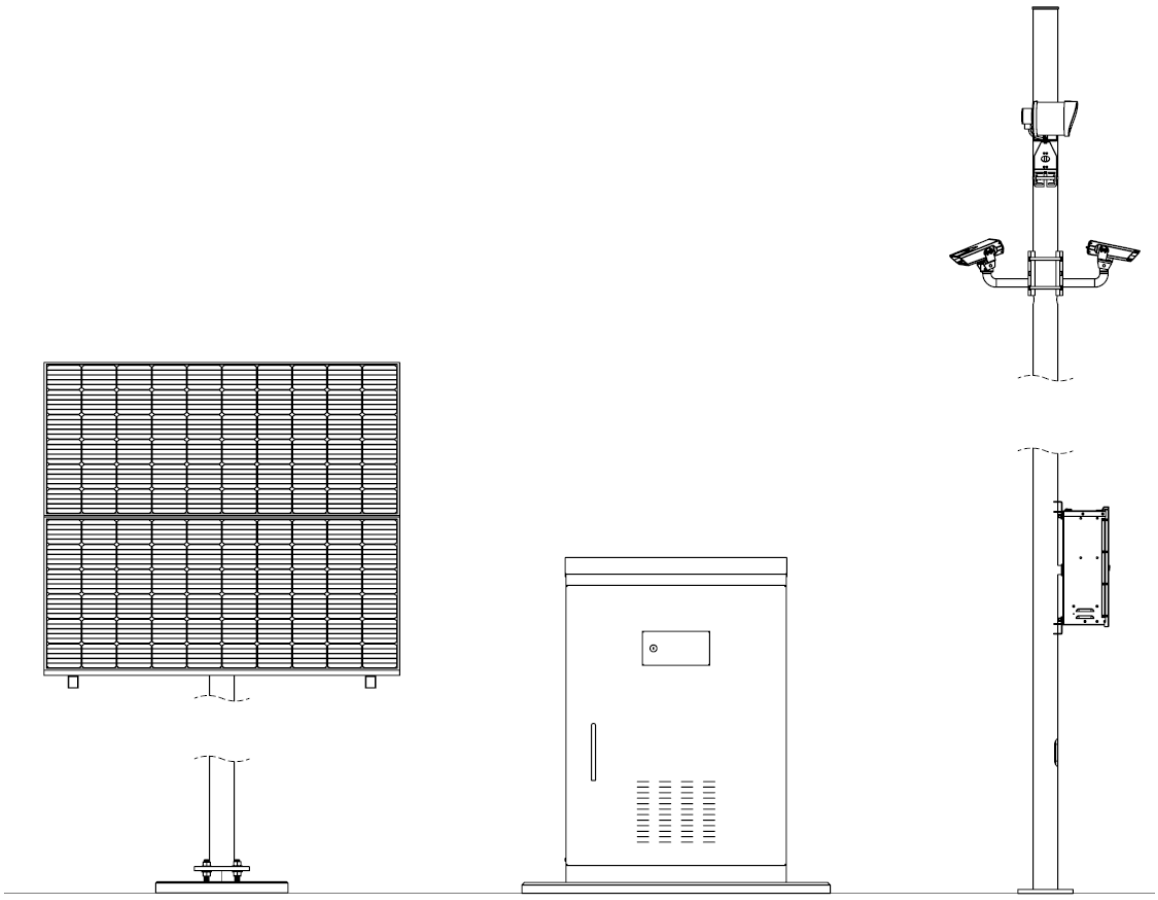
WW400

SOLAR INSTALL GUIDE

LEVEL 3



WW400D Solar Power System **WW400D Detector Pole**

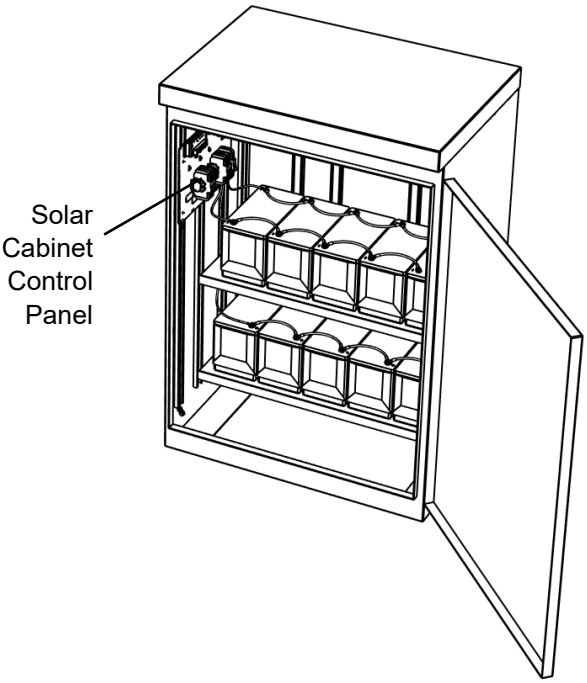
90213REVB

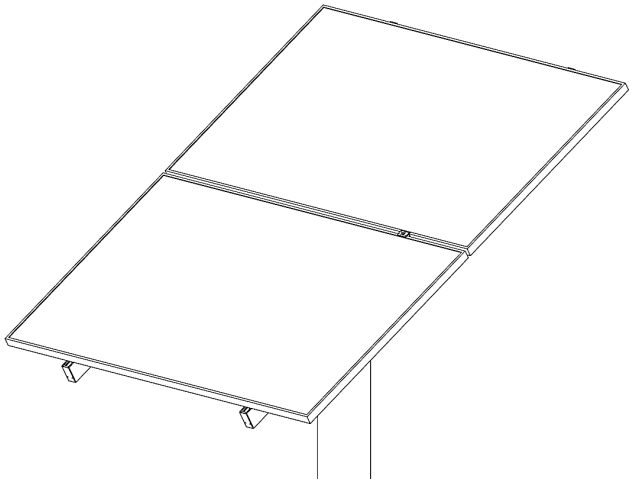
WW400 Product Level Document Overview

Manufacturer	Document Name
Carmanah	Level-1-WW400_SYSTEM-PLANNER
Carmanah	Level-2-WW400_INSTALL-GUIDE
Carmanah	Level-3-WW400-SOLAR_INSTALL-GUIDE
Carmanah	Level-3-WW400-SOLAR-NORTHERN_INSTALL-GUIDE
Carmanah	Level-4-WW400_FIELD-COMMISSIONING-GUIDE
Carmanah	E/F Series Traffic Beacon User Manual
Carmanah	G Series Traffic Beacon User Manual
MS Sedco	TC-CK1-SBE2.0 Intersector Microwave Vehicle Motion Sensor Product Manual

1.1 Introduction

The WW400 solar power system is a product option that allows the WW400D detector pole to be installed in a location where no grid power is available. The system consists of a ground-mounted cabinet, housing a battery bank and charge controllers, and separate pole-mounted solar panels. Contact Carmanah for more details, including a Solar Power Report™ and system sizing for local conditions.



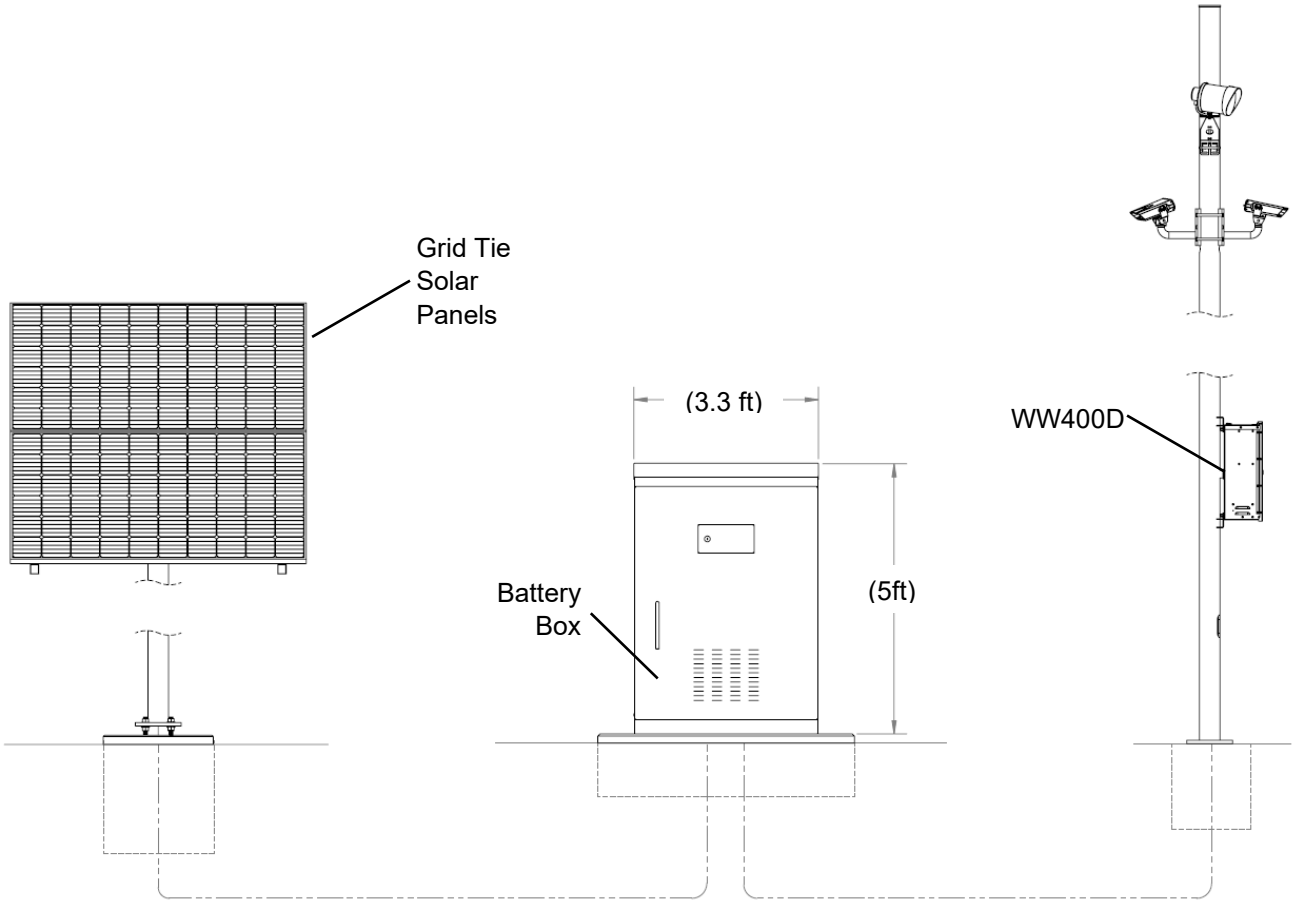


NOTE Solar powered systems deployed in the northern latitudes of the United States will require a larger solar array with four grid tie panels to power the WW400D.

1.2 System Overview and Components

The WW400 solar system powers the WW400D wrong-way detector pole. The system is comprised of the following components:

- **The solar power kit** consisting of a separate battery cabinet and solar panels is available to power the WW400D.
- **Solar Panel Characteristics** Solar panel specifications may vary depending on project requirements and availability. Please refer to supplied data sheets or contact Carmanah for additional information.
- **Battery Characteristics** The system has a series-parallel battery bank wired to output 24V to power the WWD system.
- **Low Voltage Disconnect** In the unlikely event that the batteries reach a state of low charge, an automatic disconnect has been wired into the system to prevent over-discharge of the batteries.



1.3 Solar Power System

Due to the large size of the system, a suitable concrete pad must be prepared to receive the cabinet and a 4.0" OD schedule 40 or schedule 80 steel pole with adequate footing must be supplied for mounting the solar panels.

The system is supplied with 36ft long harnesses for connecting the solar panels to the cabinet and for connecting the solar cabinet to the controller cabinet, so the components should be located close enough to each other for the harnesses to reach. Solar panels should have an unobstructed view of the sun.

NOTE Contact Carmanah if the site layout requires longer cable runs.

If no conduit was provided to route harnesses through the concrete pad, drill suitable entry point(s) in enclosure and install appropriate hardware to provide secure and weatherproof cable entry and exit point(s).

WARNING **Failure to follow following directions may result in severe injuries.**
Batteries can generate hazardous electrical currents. Use adequate PPE and ensure battery terminal are never shorted to one another.

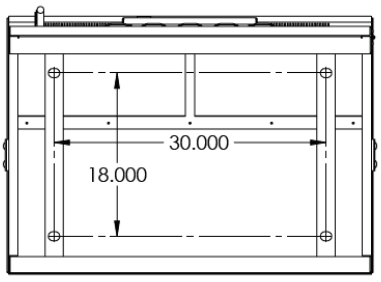
WARNING Ensure all breakers are off before installing or servicing batteries. The battery negative terminal connection to the breaker panel must always be connected last and disconnected first.

CAUTION Never leave the output and solar panel breakers on at the same time if the battery breaker is off to avoid damaging the controller.

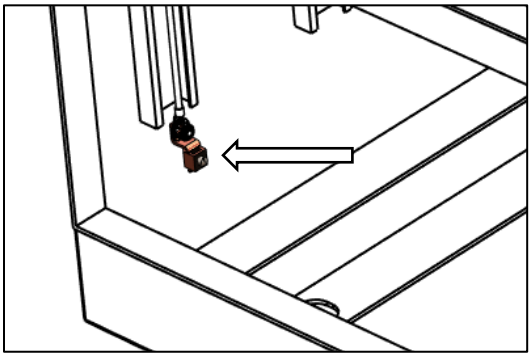
NOTE Follow applicable local guidelines and regulations when laying out and installing the system components.

NOTE Ferrules should be used on all screw terminals connections. New ferrules should be installed on all stranded wires if they are shortened.

The cabinet is 40" wide by 26" deep and is mounted using four bolts laid out in a 30"x18" pattern. A grounding lug capable of accepting up to 4AWG grounding wire is pre-installed in the lower left corner near the door.

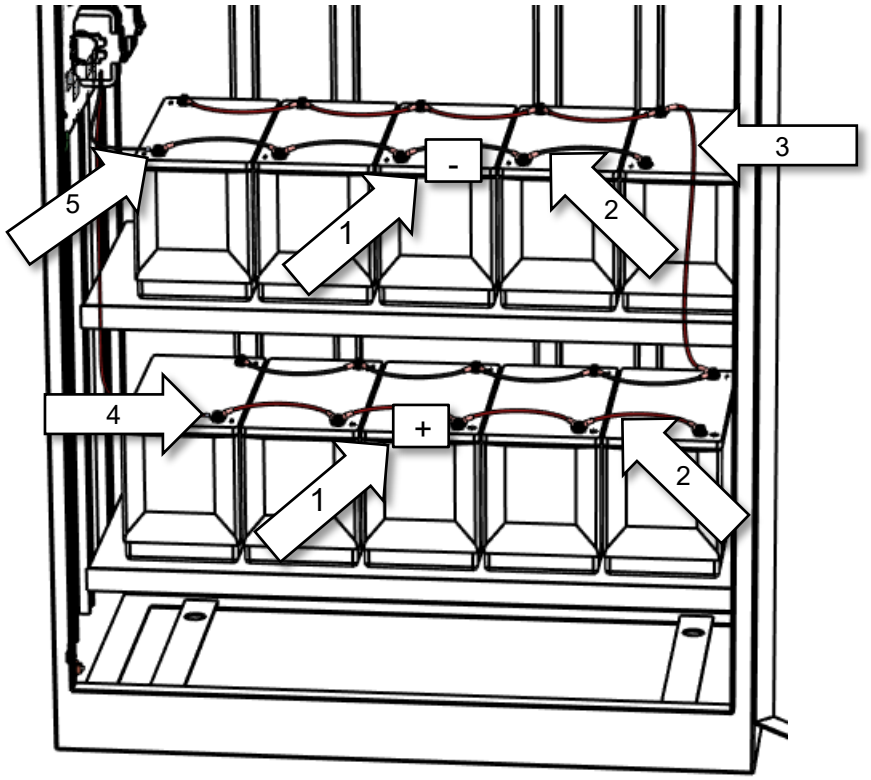


BOTTOM VIEW



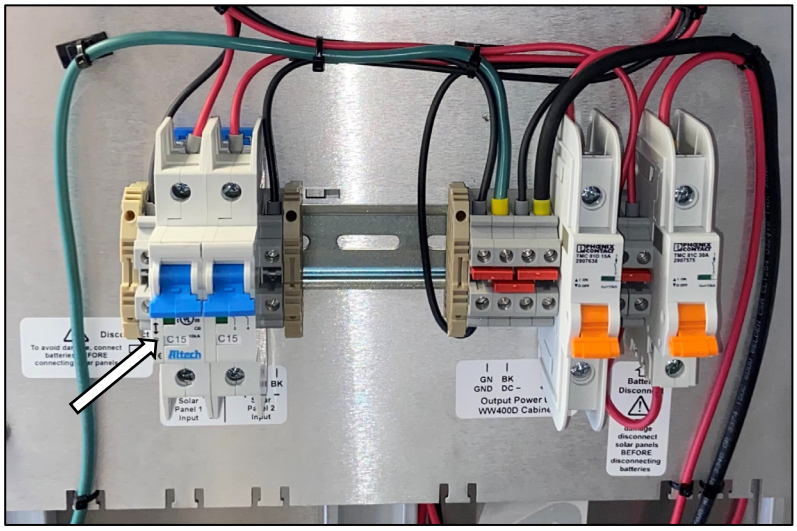
1.4 Battery Installation and Connections

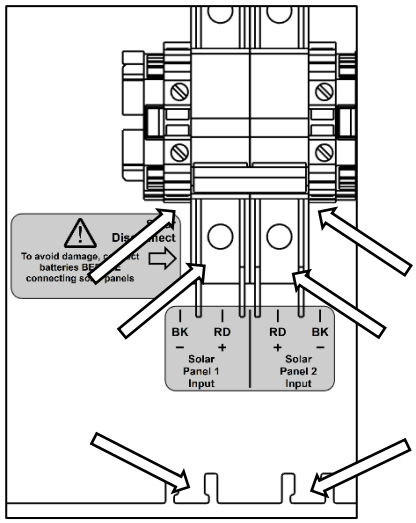
1. Place batteries on provided shelves as shown with the positive terminal end of the battery facing out on the bottom shelf and the negative terminal end facing out on the top shelf.
2. Connect batteries on each shelf in parallel with each other using provided jumpers.
3. Install provided jumper between lower shelf right battery negative terminal and upper shelf right battery positive terminal to create series connection.
4. Connect red wire to lower left battery positive (near) terminal.
5. Connect black wire to upper left battery negative (near) terminal.



1.5 Solar Panel Installation

Prepare post according to solar panel mount instructions and follow instructions to install solar panels onto pole. Ensure solar panels are facing the equator (pointing South in the Northern hemisphere). Connect provided harnesses to breaker panel inside enclosure and route harness to solar panels. Connect harnesses as shown on label. Strain relieve cables to back plate using provided “dog-bone” features.

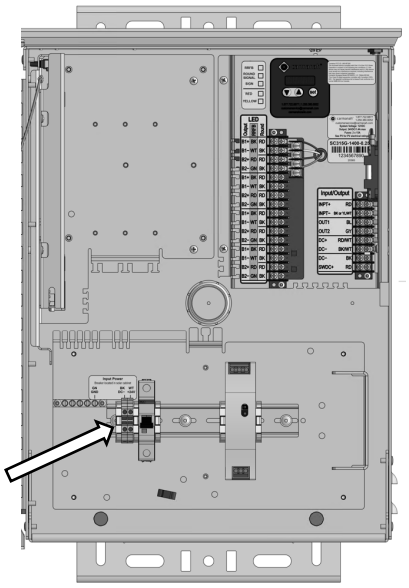


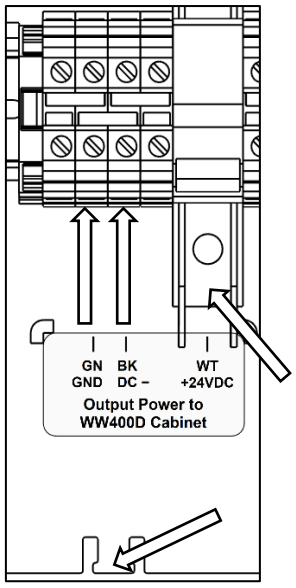


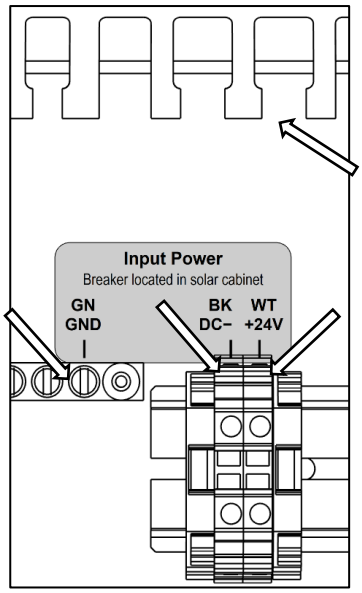
Connect MC4 connectors to solar panels only after making breaker panel connections.

1.6 Controller Cabinet Connections

Route provided harness between the solar cabinet and the controller cabinets. Connect the three wires as shown on the labels and strain-relieve the jacket.



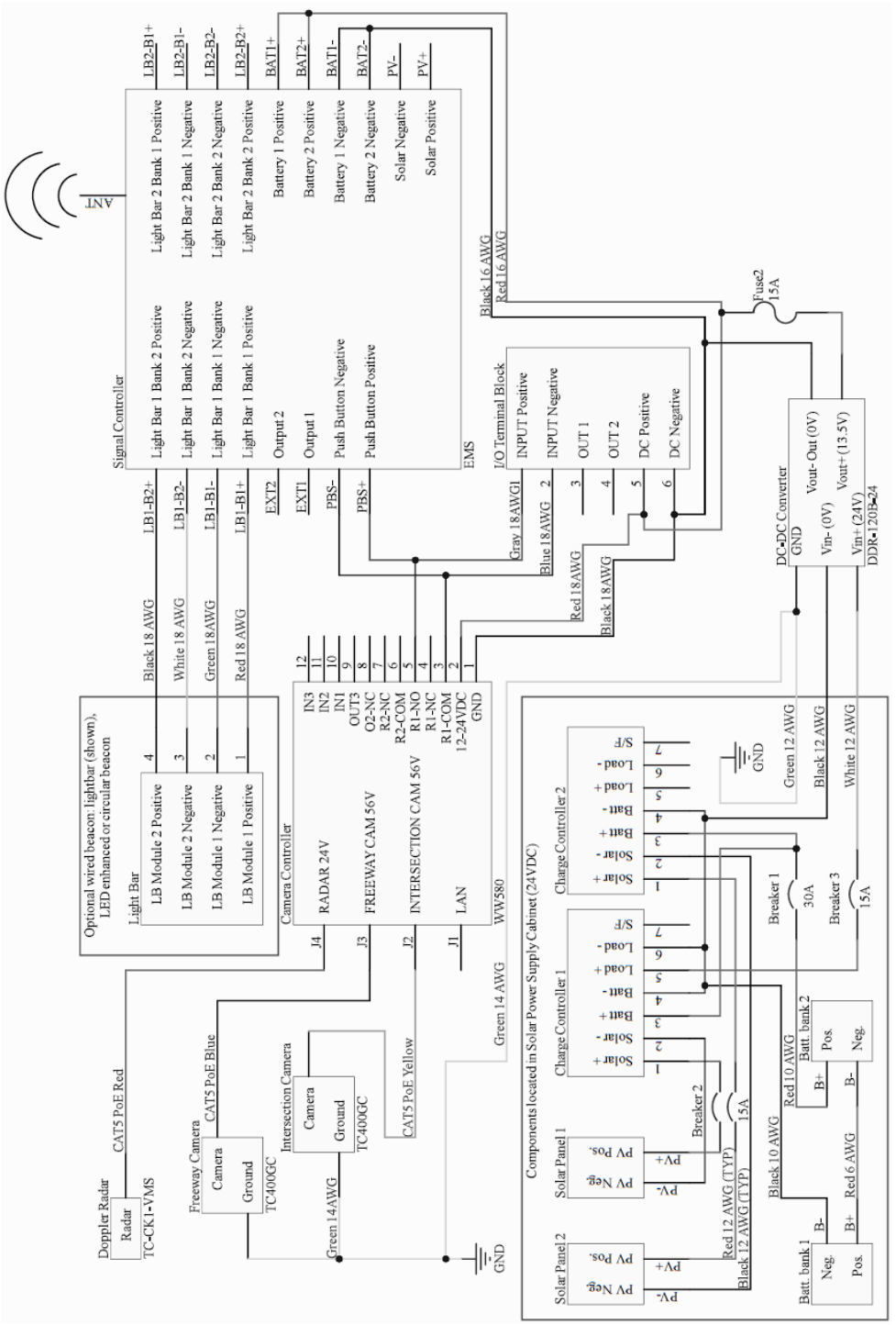




1.7 Testing

Ensure that when energized, the battery cabinet outputs 24V to the WW400D controller cabinet.

1.8 Solar Diagram



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Technical Support:

Email: customersupport@carmanah.com
Toll Free: 1.877.722.8877 (US & Canada)
Worldwide: 1.250.380.0052
Fax: 1.250.380.0062
Web: carmanah.com