# R920-E

## Solar-Powered Rectangular Rapid Flashing Beacon

Rectangular rapid flashing beacons (RRFBs) improve pedestrian safety by increasing yield rates to 72-96% at crosswalks.*

- The benchmark for RRFBs, the R920-E meets MUTCD requirements, including IA-21, and is Buy America compliant
- Compact and lightweight solar engine
- Audible pushbutton activation with all ADA compliance features
- Energy Balance Report™ (EBR) prepared for every location to ensure battery longevity


### Superior Design and Technology

The R920-E utilizes a self-contained solar engine integrating the Energy Management System (EMS) with an on-board user interface, housed in a compact enclosure together with the batteries and solar panel. MUTCD interim approval IA-21 flash pattern and multiple configurations enable the R920-E to handle all crosswalk applications.

### Easy Installation

With its highly efficient and compact design, installation is quick and uncomplicated, dramatically reducing installation costs. Retrofitting can be done where existing sign bases are used to enhance existing marked crosswalks in minutes, and new installations can be completed without the cost of larger poles, new bases, and trenching.

### Advanced User Interface

The R920-E comes with an on-board user interface for quick configuration and status monitoring. It allows for simple in-the-field adjustment of flash pattern, duration, intensity, ambient auto adjust, night dimming, and many more. Settings are automatically sent wirelessly to all units in the system.

### Reliable

Designed with Carmanah's industry-leading solar modeling tools to provide dependable year-after-year operation. We prepare an Energy Balance Report (EBR) for every location.

### Trusted for 20+ Years

With thousands of installations, Carmanah's systems are the benchmark in traffic applications and other transportation applications worldwide.

* U.S. Department of Transportation Federal Highways Administration, Publication No. FHWA-HRT-10-043 - "Effects of Yellow Rectangular Rapid-Flashing Beacons on Yielding at Multilane Uncontrolled Crosswalks"

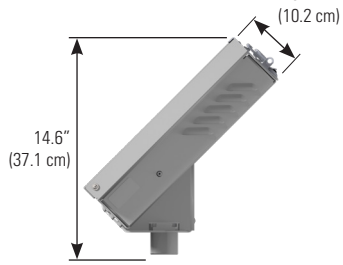
# R920-E

**Solar-Powered Rectangular Rapid Flashing Beacon**

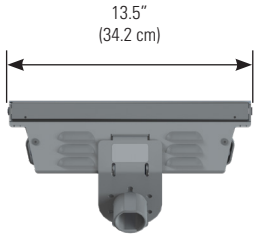
1.844.412.8395 | traffic@carmanah.com | carmanah.com

## SOLAR ENGINE DIMENSIONS

Side View




Bottom View




## SOLAR ENGINE MOUNTING

2.0"- 2.5" Perforated Square Pole Mount

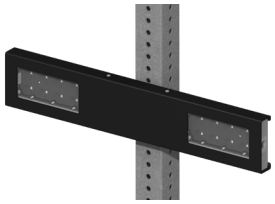
2.38" - 2.88" Diameter Round Pole Mount

4.0" - 4.5" Diameter Round Pole Mount

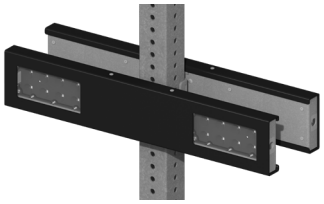
Side Pole Mount

## LIGHT BAR CONFIGURATION

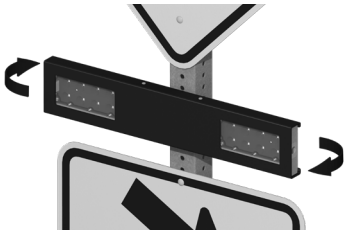
Uni-directional Configuration



Bi-directional Configuration



## IN-THE-FIELD AIMING



Rotate the light bar towards the incoming vehicle lane, independent of the wire hole location.

## BEACON SPECIFICATIONS

| | |
|---|---|
| Optical | MUTCD interim approval IA-21 and MUTCDC compliant |
| | Purpose-built light bar optics = maximum efficiency and no stray light<br>Exceeds SAE J595 class 1 intensity by 2.5 to 3x when used as recommended<br>Meets SAE J578 chromaticity |
| | 3 in (76 mm) x 7 in (178 mm) clear, UV-rated polycarbonate lens with yellow LEDs |
| | High-power LEDs: +90% lumen maintenance (L90) based on IES LM-80 |
| | Side-emitting pedestrian confirmation LEDs |
| | Independent, stainless steel mounting brackets make back-to-back installation simple and enable in-field aiming for maximum effectiveness |
| | Yellow, black, or green powder coated light bar covers |

## SYSTEM SPECIFICATIONS

| | |
|---|---|
| On-Board User Interface (OBUI) | Adjustable system settings with auto-scrolling LED display on our latest EMS |
| | System test, status, and fault detection: battery, solar, button, beacon, radio, day/night |
| | Flash patterns: RFB (WW+S), RFB1 (WW+S legacy), RFB2 (WSDOT), 0.5 sec. alternating (MUTCD), 0.5 sec. unison (MUTCD), 0.5 sec. x3 alternating (MUTCD), 0.1 sec. unison, 0.25 sec. unison, 0.1 sec. x3 quick flashes unison, 0.1 sec. x3 quick flashes alternating, steady on |
| | Input: momentary for pushbutton activation, normally open switch, normally closed switch |
| | Flash duration: 5 sec. to 1 hr. |
| | Intensity setting: 20 to 1400 mA for multiple RRFBs, circular beacons, or LED enhanced signs |
| | Nighttime dimming: 10 to 100% of daytime intensity |
| | Ambient Auto Adjust: increases intensity during bright daytime |
| | Automatic Light Control: reduces intensity if the battery is extremely low |
| | Temperature correction: yellow beacons |
| | Calendar: internal time clock function |
| | Radio settings: enable/disable, selectable channel from 1 to 14 |
| | Output: enabled when beacons flashing daytime and nighttime, or nighttime only |
| | Activation counts and data reporting via OBUI or optional USB connection |
| Beacon Communication | Encrypted, wireless radio with 2.4 GHz mesh technology |
| | Wireless update of settings from any unit to all systems on the same radio channel |
| | User-selectable multiple channels to group different beacons and ensure a robust wireless signal |
| | Communicates with all other Gen III radio-enabled systems including our R820-E, -F, and -G circular beacons |
| | Instantaneous wireless activation: <150 ms |
| | Wireless range: 1000 ft (305 m) |
| | Integrated, vandal-resistant antenna |
| Energy Collection | 15 W high-efficiency photovoltaic solar panel |
| | 45 deg tilt for optimal energy collection |
| | Maximum Power Point Tracking with Temperature Compensation (MPPT-TC) battery charger for optimal energy collection in all solar and battery conditions |
| Energy Storage | 12 V 14 Ahr. battery system |
| | Replaceable, recyclable, sealed, maintenance-free, best-in-class AGM batteries offer the widest temperature range and longest life |
| | Battery design life: +5 yrs. |
| | Tool-less battery change with quick connect terminals and strapping for easy installation |
| Solar Engine Construction | Weatherproof, gasketed enclosure with vents for ambient air transfer (NEMA 3R) |
| | Lockable, hinged lid for access to on-board user interface and batteries |
| | Corrosion-resistant aluminum with stainless steel hardware |
| | Raw aluminum finish or yellow, black, or green powder coated |
| | Prewired to minimize installation time |
| | High-efficiency optics and EMS = the most compact, lightweight system |
| | 19 lb (8.6 kg) including batteries, excluding beacons and pushbutton |
| Environmental | -35 to 165° F (-37 to 74° C) system operating temperature |
| | -40 to 140° F (-40 to 60° C) battery operating temperature |
| | 150 mph (241 kph) wind speed as per AASHTO LTS-6 |
| Activation | Pushbutton: ADA-compliant, piezo-driven with visual LED and two-tone audible confirmation |
| | Audible pushbutton station: ADA-compliant, piezo-driven with visual LED and customizable voice message confirmation |
| **Warranty** | **5-year limited warranty, excluding batteries** |

MUTCD IA-21

**Specifications subject to local environmental conditions, and may be subject to change.**

All Carmanah products are manufactured in facilities that are certified to ISO quality standards.
"Carmanah" and Carmanah logo are trademarks of Carmanah Technologies Corp.
© 2021, Carmanah Technologies Corp.

Document: SPEC_TRA_R920-E-CAD-sign_RevT