R820 SERIES

CROSSWALK FLASHING BEACON COMPARISON

carmanah® Traffic

FEATURES	R820-E	R820-F	R820-G
Power options	DC	DC	DC or AC
Solar panel	12.8 W	30 W	20, 50, 80 W
Solar panel angle	45°	45°	45°
Solar engine design	Self-contained	Self-contained	Cabinet
Terminal blocks for wiring connections	No	No	Yes
Enclosure/Cabinet colors	Black, Yellow, Green, Natural Aluminum	Black, Yellow, Green, Natural Aluminum	Black, Natural Aluminum
Interactive user interface	Yes	Yes	Yes
Battery options	2 x 7 Ah	17.2, 34.4 Ah	33, 75, 100 Ah
Maximum beacons	2	4	4
Signal housing colors	Black, Yellow, Green	Black, Yellow, Green	Black, Yellow, Green
ITE and 1.7x ITE intensity	Yes	Yes	Yes
MUTCD and ITE-compliant	Yes	Yes	Yes
Alternate flash patterns	Yes	Yes	Yes
LED modules, yellow, 8" or 12"	Yes	Yes	Yes
LED embedded signs	Yes	Yes	Yes
Push button options	ADA-Compliant	ADA-Compliant, Talking	ADA-Compliant, Talking
Maximum push buttons	2	2	2
Passive detection sensor available	No	Yes	Yes
Wireless communication between beacons	Yes	Yes	Yes
Top of pole mounting	Yes	Yes	Yes
Side of pole mounting	Yes	Yes	Yes
Square Telespar or 2 3/8" round poles	Yes	Yes	No
Wood post mounting	Yes	Yes	Yes, side of post

R820-E
SOLAR CROSSWALK FLASHING BEACON

carmanah® Traffic

MUTCD-compliant, pedestrian-activated warning beacon for uncontrolled marked crosswalks

- Improve pedestrian safety by increasing driver yield rates
- Ultra-efficient optics and Energy Management System (EMS)
- Compact design to simplify installation
- Proven technology platform
- Meets and exceeds MUTCD requirements

Superior Design and Technology
The R820-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 flash patterns, available ITE intensity, and multiple configurations enable the R820-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 R820-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.

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

WE SIMPLIFY PLANNING.
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SOLAR CROSSWALK FLASHING BEACON

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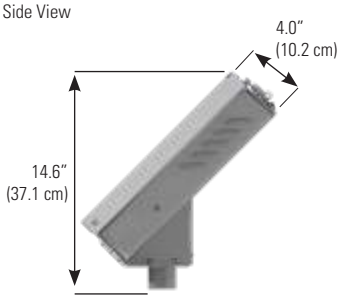
carmanah® Traffic

DIMENSIONS

Side View



Bottom View

SOLAR ENGINE MOUNTING

2.0"- 2.5" Perforated Square Pole Mount

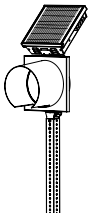
2.38" - 2.88" Diameter Round Pole Mount

4.0" - 4.5" Diameter Round Pole Mount

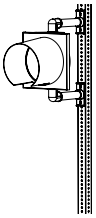
Side Pole Mount

BEACON MOUNTING

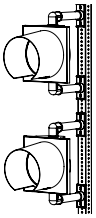
Single – Integrated Engine and Beacon



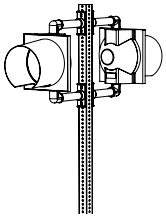
Single



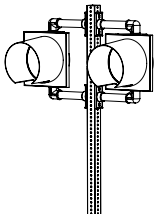
Dual – Vertical



Dual – Horizontal Back-to-back



Dual – Horizontal



*** Other solar engine and beacon mounting configurations are available.**

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: RFB1 (WW+S), RFB2 (WSDOT), 0.5 sec. alternating (MUTCD), 0.5 sec. unison (MUTCD), 0.1 sec. unison, 0.25 sec. unison, 0.1 sec. x3 quick flashes unison, 0.1 sec. x3 quick flashes alternating
	Input: momentary for push button activation, normally open switch, normally closed switch
	Flash duration: 5 sec. to 1 hr.
	Intensity setting: 20 to 1400 mA for multiple circular beacons, RRFBs, 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 or red 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
Optical	**MUTCD compliant:** 2009 MUTCD, Chapter 4L, Flashing Beacons, Manual on Uniform Traffic Control Devices (MUTCD)
	ITE VTCSH-LED Circular Signal Supplement compliant: meets ITE or 1.7x ITE intensity when used as recommended
	12 in (305 mm) or 8 in (203 mm) diameter LED modules, yellow
	High-power LEDs: +90% lumen maintenance (L90) based on IES LM-80
	Yellow, black, or green signal heads in UV-resistant polycarbonate or aluminum
Connectivity	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 R920-E, R920-F, and SC315 RRFBs
	Instantaneous wireless activation: <150 ms
	Wireless range: 1000 ft (305 m)
	Integrated, vandal-proof antenna
Energy Collection	13 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 push button
Environmental	-40 to 165° F (-40 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	**Push button:** ADA-compliant, piezo-driven with visual LED and two-tone audible confirmation
Warranty	**5-year limited warranty**

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.

US Patent No 6,573,659, Other patents pending.

Document: SPEC_TRA_R820-E_RevA

R820-F
SOLAR CROSSWALK FLASHING BEACON

carmanah® Traffic

MUTCD-compliant, pedestrian-activated warning beacon for uncontrolled marked crosswalks

- Improve pedestrian safety by increasing driver yield rates
- Ultra-efficient optics and Energy Management System (EMS)
- Compact design to simplify installation
- Proven technology platform
- Meets and exceeds MUTCD requirements

Superior Design and Technology
The R820-F 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. A larger solar engine enables the R820-F to work with audible push button stations, passive activation sensors, and remote monitoring, as well as operate at higher intensities and increased activations in challenging environments.

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 R820-F 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.

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

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SOLAR CROSSWALK FLASHING BEACON

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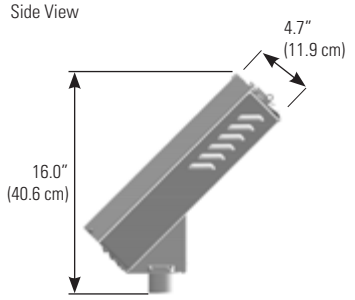
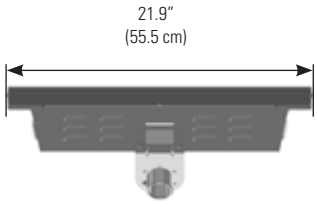
DIMENSIONS

Side View



Bottom View



SOLAR ENGINE MOUNTING

2.0"- 2.5" Perforated Square Pole Mount

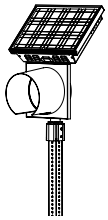
2.38" - 2.88" Diameter Round Pole Mount

4.0" - 4.5" Diameter Round Pole Mount

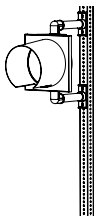
Side Pole Mount

BEACON MOUNTING

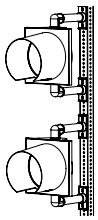
Single – Integrated Engine and Beacon



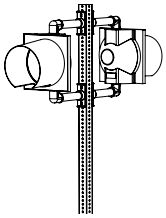
Single



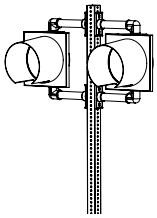
Dual – Vertical



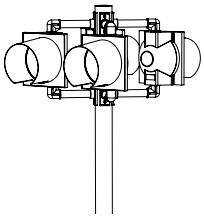
Dual – Horizontal Back-to-back



Dual – Horizontal



Quad – Horizontal



*** Other solar engine and beacon mounting configurations are available.**

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US Patent No 6,573,659, Other patents pending.
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Document: SPEC_TRA_R820-F_RevA

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: RFB1 (WW+S), RFB2 (WSDOT), 0.5 sec. alternating (MUTCD), 0.5 sec. unison (MUTCD), 0.1 sec. unison, 0.25 sec. unison, 0.1 sec. x3 quick flashes unison, 0.1 sec. x3 quick flashes alternating
	Input: momentary for push button activation, normally open switch, normally closed switch
	Flash duration: 5 sec. to 1 hr.
	Intensity setting: 20 to 1400 mA for multiple circular beacons, RRFBs, 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 or red 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
Optical	**MUTCD compliant:** 2009 MUTCD, Chapter 4L, Flashing Beacons, Manual on Uniform Traffic Control Devices (MUTCD)
	ITE VTCSH-LED Circular Signal Supplement compliant: meets ITE or 1.7x ITE intensity when used as recommended
	12 in (305 mm) or 8 in (203 mm) diameter LED modules, yellow
	High-power LEDs: +90% lumen maintenance (L90) based on IES LM-80
	Yellow, black, or green signal heads in UV-resistant polycarbonate or aluminum
Connectivity	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 R920-E, R920-F, and SC315 RRFBs
	Instantaneous wireless activation: <150 ms
	Wireless range: 1000 ft (305 m)
	Integrated, vandal-proof antenna
Energy Collection	30 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 34 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
	39 lb (17.7 kg) including batteries, excluding beacons and push button
Environmental	-40 to 165° F (-40 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	**Push button:** ADA-compliant, piezo-driven with visual LED and two-tone audible confirmation
	Audible push button station: ADA-compliant, piezo-driven with visual LED and customizable voice message confirmation
	Passive activation: microwave-based sensor detects pedestrian
Warranty	**5-year limited warranty**

R820-G
SOLAR AND AC CROSSWALK FLASHING BEACON

carmanah® Traffic

MUTCD-compliant, pedestrian-activated warning beacon for uncontrolled marked crosswalks

- Improve pedestrian safety by increasing driver yield rates
- Passive activation: microwave-based sensor detects pedestrian
- Audible push button station
- Solar power performance even in partially shaded applications
- Solar and AC-powered models wirelessly communicate and can be used together in the same application
- Ultra-efficient optics and Energy Management System (EMS) enable it to meet and exceed MUTCD light intensity requirements

Superior Design and Technology
The R820-G is a cabinet-based system with a separate, high-power solar panel. This design enables the R820-G to work with audible push button stations, passive activation sensors, and remote monitoring, as well as operate at higher intensities and increased activations in challenging environments. MUTCD flash patterns, available ITE intensity, and multiple configurations enable the R820-G to handle all crosswalk applications.

Easy Installation
All components, including the battery or AC power supply, Energy Management System (EMS) and optional audible push button controller are housed in a compact, lockable, purpose-built enclosure. It also incorporates a wire routing and termination system, and all components are wired at the factory for an efficient installation.

Advanced User-Interface
The R820-G 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.

Compatibility
Compatible with the Carmanah R820-E, R820-F, and our RRFBs. Interchange solar and AC power models within the same application.

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

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R820-G

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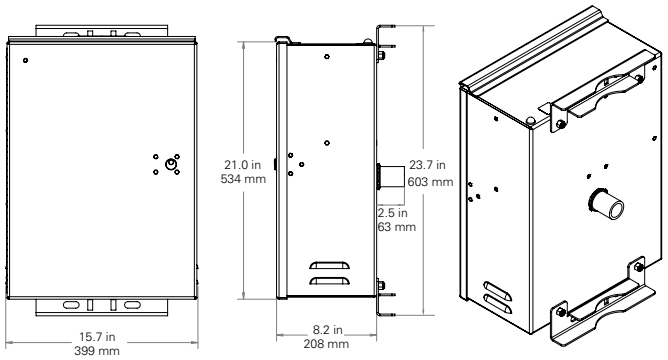
CABINET DIMENSIONS

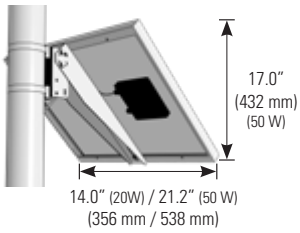


SOLAR PANEL MOUNTING

4.5" Diameter Round Top of Pole Mount
(50 W and 80 W panels)

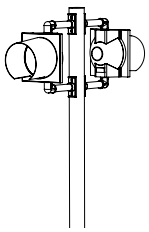
Top of pole to bottom of panel

Side of Pole Mount
(20 W, 50 W, and 80 W panels)

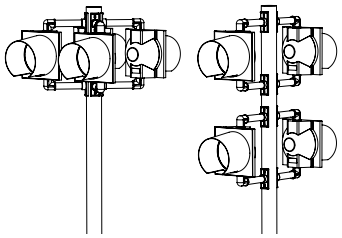


BEACON MOUNTING

Dual Beacon



Quad Beacon

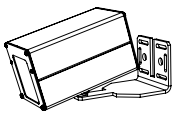


ACTIVATION OPTIONS

Push Button

Audible Push Button Station

Passive Activation Sensor



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: RFB1 (WW+S), RFB2 (WSDOT), 0.5 sec. alternating (MUTCD), 0.5 sec. unison (MUTCD), 0.1 sec. unison, 0.25 sec. unison, 0.1 sec. x3 quick flashes unison, 0.1 sec. x3 quick flashes alternating
	Input: momentary for push button activation, normally open switch, normally closed switch
	Flash duration: 5 sec. to 1 hr.
	Intensity setting: 20 to 1400 mA for multiple circular beacons, RRFBs, 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 or red 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
Optical	**MUTCD compliant:** 2009 MUTCD, Chapter 4L, Flashing Beacons, Manual on Uniform Traffic Control Devices (MUTCD)
	ITE VTCSH-LED Circular Signal Supplement compliant: meets ITE or 1.7x ITE intensity when used as recommended
	12 in (305 mm) or 8 in (203 mm) diameter LED modules, yellow
	High-power LEDs: +90% lumen maintenance (L90) based on IES LM-80
	Yellow, black, or green signal heads in UV-resistant polycarbonate or aluminum
Connectivity	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 R920-E, R920-F, and SC315 RRFBs
	Instantaneous wireless activation: <150 ms
	Wireless range: 1000 ft (305 m)
	Integrated, vandal-proof antenna
Power System	Solar or AC-powered
	AC: 90-264 VAC input, 6-14 AWG Replaceable AC-DC power supply, circuit breaker, terminal block wiring
Energy Collection	20, 50, or 80 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 battery system with multiple sizes: 33, 35, 75, 100 Ahr.
	Replaceable, recyclable, sealed, maintenance-free, best-in-class AGM batteries offer the widest temperature range and longest life
	Battery design life: +5 yrs.
Cabinet Construction	Weatherproof, gasketed enclosure with vents for ambient air transfer (NEMA 3R)
	Lockable, hinged door with #2 lock
	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
Environmental	-40 to 165° F (-40 to 74° C) system operating temperature
	-40 to 162° F (-40 to 72° C) battery operating temperature
	150 mph (241 kph) wind speed as per AASHTO LTS-6
Activation	**Push button:** ADA-compliant, piezo-driven with visual LED and two-tone audible confirmation
	Audible push button station: ADA-compliant, piezo-driven with visual LED and customizable voice message confirmation
	Passive activation: microwave-based sensor detects pedestrian
Warranty	**5-year limited warranty**

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US Patent No 6,573,659, Other patents pending.

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