carmanah®

Traffic Beacons & Sign Systems

for the Transportation Industry

Carmanah is a leading manufacturer of compliant solar and AC-powered systems for traffic safety, with thousands of installations across North America.

OUR MOST POPULAR SYSTEMS:

CROSSWALK BEACONS AND RRFBs

SCHOOL ZONE BEACONS AND SIGNS

SPEEDCHECK® RADAR SPEED SIGNS

Helping you see the whole picture™

with our traffic solutions.

CALM TRAFFIC:

Radar Speed Signs have an immediate and long-lasting impact on driver behavior.

Applications:

- Pedestrian and school zones
- Residential areas
- Arterial and rural roadways
- Highways and expressways

Our radar speed signs:
SPEEDCHECK-12, SPEEDCHECK-15, SPEEDCHECK-18, SPEEDCHECK-15/18-AS, SPEEDCHECK-15/18-VS

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ALERT WRONG-WAY DRIVERS

Focus wrong-way driver attention and reduce wrong-way event response times with high-intensity and intelligent wrong-way flashing sign systems.

Our wrong-way beacons:
WW100, WW400

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YIELD AT CROSSWALKS

Alert drivers to pedestrians crossing mid-block with Rectangular Rapid Flashing Beacons (RRFBs) or Circular Flashing Beacons.

Applications:

- Mid-block crosswalks
- Trail crossings
- Roundabouts

Our RRFBs:
R920-E, R920-F, SC315-G

Our circular beacons:
R820-E, R820-F, R820-G

PAGE 3

BRIGHTEN SIGNS

Draw attention to school zones, highlight yield requirements at crosswalks, and reduce stop sign blow-throughs with LED-enhanced flashing signs.

Applications:

- Stop signs
- Crosswalk signs
- School zone signs
- and more

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SLOW FOR SCHOOL ZONES

Don't just tell drivers to slow down with school zone signs—show them by adding School Zone Beacons (SZBs), radar speed signs, and LED flashing signs.

Our school zone flashing beacons:
R829-E, R829-F, R829-G

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FOCUS ON SIGNS

Improve stop, warning, and new sign compliance with 24-Hour Flashing Beacons.

Applications:

- Stop signs
- Yield signs
- Curve Ahead signs
- Wrong Way signs

Our 24-hour flashing beacons:
R247-E, R247-F, R247-G

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We simplify planning

No matter what your project application—crosswalk, school zone, radar speed sign, 24-hour sign marking and others—we can run a comprehensive site assessment to determine the right product for your project.

Learn more at **carmanah.com**

Crosswalks

Rectangular Rapid Flashing Beacons (RRFBs) and Circular Flashing Beacons

RRFBs and circular flashing beacons improve driver yield rates at crosswalks

Support your Vision Zero and walkability initiatives with crosswalk flashing beacons. Both the rectangular rapid flashing beacon (RRFB) and circular flashing beacon are pedestrian-activated, high-intensity warning lights that notify drivers when a pedestrian is entering a crosswalk.

Studies have shown that the Rectangular Rapid Flashing Beacon (or RRFB) can improve driver yield rates at crosswalks from **18% to as high as 96%.**

Configure an RRFB

Solar Sizing Matters

carmanah®

Our beacons and signs are the most reliable and brightest on the market because we're experts at sizing-up solar.

How do we do it? It's called a Solar Power Report (SPR), and it's calculated by your site location and the profile of each unique installation site.

Our Solar Power Report takes into account environmental factors and product settings.

Once completed, the Solar Power Report lets us know what size of solar kit is sustainable year-round, or whether AC power options maybe required for that unique location.

Watch our video on how we prove solar performance with our Solar Power Report.

Learn more and request an SPR

1.844.412.8395 | traffic@carmanah.com

Our Crosswalk Site Assessment begins with these questions

carmanah®

Specifying the beacon for your location

1. How many activations do you expect each day? How long would you like the beacons to flash for?

2. How many push buttons and light bars are you looking to power at each pole in your crossing? Do you require a talking push button or passive detection?

3. Where will it be installed? (City/Town/County or Latitude/Longitude Coordinates)

4. Will there be any shading at the install site? If yes, please provide the exact Latitude/ Longitude coordinates, street address, or Google street view.

5. Are you planning on installing on existing poles? What size of pole is currently at the site?

6. Do you require specific colors for the beacon components?

7. How many crosswalks are you looking to outfit with RRFBs?

We simplify planning

Contact us to get your Solar Power Report and purchase specifications.

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RRFBs

Crosswalk Beacon Comparison Chart

FEATURES	R920-E	R920-F	SC315-G
Power options	DC	DC	DC or AC
Solar panel	15 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, Yellow, Green, Natural Aluminum
Interactive user interface	Yes	Yes	Yes
Battery options	14 Ah (2x 7 Ah)	18, 36 Ah	35, 75, 100 Ah
Maximum light bars	2	4	4
Light bar paint colors	Black, Yellow, Green	Black, Yellow, Green	Black, Yellow, Green
MUTCD, SAE J595, and ITE-compliant output	Yes	Yes	Yes
MUTCD-compliant flash pattern (IA-21)	Yes	Yes	Yes
Alternate flash patterns	Yes	Yes	Yes
Push button options	ADA-Compliant, Audible APS	ADA-Compliant, Audible APS	ADA-Compliant, Audible APS
Maximum push buttons	2	2	2
Passive detection sensor available	No	Yes	Yes
Wireless communication between RRFBs	Yes	Yes	Yes
StreetHub remote connectivity option	No	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
Mast arm mounting	Yes	Yes	Yes

R920-E

Solar-Powered Rectangular Rapid Flashing Beacon Data Sheet

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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
- Solar Power Report™ (SPR) 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

Every solar-powered model is solar-sized by location to ensure year-after-year operation. Carmanah includes a Solar Power Report to prove sustainability over a 12-month period.

MUTCD COMPLIANT

MUTCD compliant

Buy America compliant

5 YEARS

5-year limited warranty

SOLAR POWER 12 REPORT

Solar-sized for every location

* 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"

1.844.412.8395 | traffic@carmanah.com

R920-E

Solar-Powered Rectangular Rapid Flashing Beacon Data Sheet

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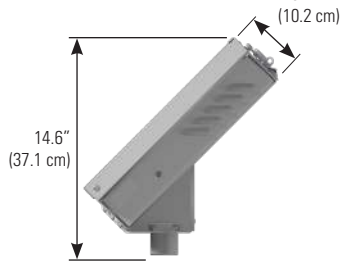
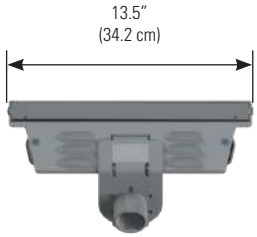
SOLAR ENGINE DIMENSIONS

Side View



Bottom View



SOLAR ENGINE MOUNTING

2.0"- 2.5" Perforated Square Pole Mount

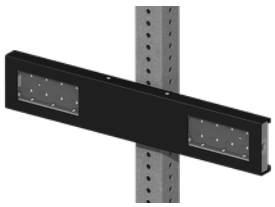
2.38" - 2.88" Diameter Round Pole Mount

3.5" - 4.5" Diameter Round Pole Mount

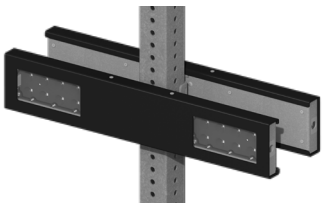
Side Pole Mount

LIGHT BAR CONFIGURATION

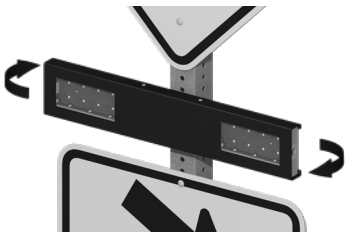
Uni-directional Configuration



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 Exceeds SAE J595 class 1 intensity by 2.5 to 3x when used as recommended 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, dusk-to-dawn operation
	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, 1-year limited on batteries**

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.

Document: DATA_TRA_R920-E_RevU

R920-F

Solar-Powered Rectangular Rapid Flashing Beacon Data Sheet

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

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

Superior Design and Technology

The R920-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 R920-F to work with audible pushbutton 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 R920-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

Every solar-powered model is solar-sized by location to ensure year-after-year operation. Carmanah includes a Solar Power Report to prove sustainability over a 12-month period.

MUTCD compliant

Buy America compliant

5-year limited warranty

Solar-sized for every location

* 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"

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R920-F

Solar-Powered Rectangular Rapid Flashing Beacon Data Sheet

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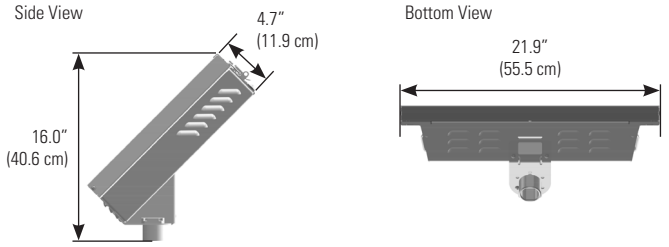
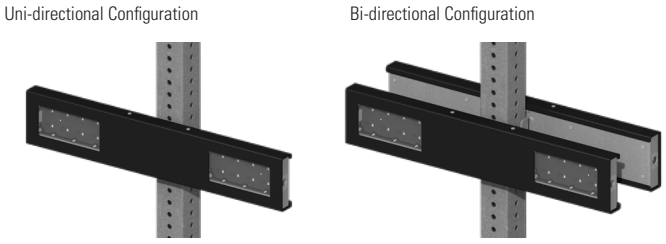
SOLAR ENGINE DIMENSIONS

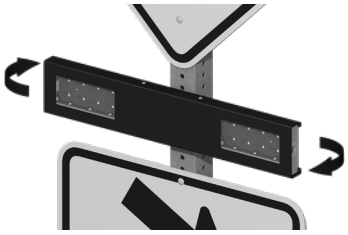


SOLAR ENGINE MOUNTING

LIGHT BAR 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 Exceeds SAE J595 class 1 intensity by 2.5 to 3x when used as recommended 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, dusk-to-dawn operation
	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 E.g., for relay control of overhead lighting
	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	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 36 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 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
	Passive activation: microwave-based sensor detects pedestrian
Warranty	**5-year limited warranty, 1-year limited on batteries**

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

Document: DATA_TRA_R920-F_RevC

SC315-G

Cabinet-Based Rectangular Rapid Flashing Beacon Data Sheet

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

- The benchmark for RRFBs, the SC315-G meets MUTCD requirements, including IA-21, and is Buy America compliant
- Audible pushbutton or passive pedestrian activation
- Solar or AC-powered
- Solar Power Report™ (SPR) prepared for every location to ensure battery longevity

Superior Design and Technology

The SC315-G is a cabinet-based system with a separate, high-power solar panel. This design enables the SC315-G to work with audible pushbutton stations, passive activation sensors, and remote monitoring, as well as operate at higher intensities and increased activations in challenging environments. MUTCD interim approval IA-21 flash pattern and multiple configurations enable the SC315-G to handle all crosswalk applications.

Easy Installation

All components, including the battery or AC power supply, Energy Management System (EMS) and optional audible pushbutton 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 SC315-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.

Reliable

Every solar-powered model is solar-sized by location to ensure year-after-year operation. Carmanah includes a Solar Power Report to prove sustainability over a 12-month period.

MUTCD compliant

Buy America compliant

5-year limited warranty

Solar-sized for every location

* 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"

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SC315-G

Cabinet-Based Rectangular Rapid Flashing Beacon Data Sheet

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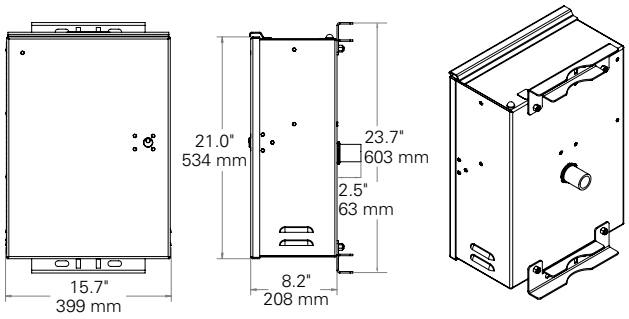
CABINET DIMENSIONS



SOLAR PANELS AND MOUNTS

3.5" - 4.5" Diameter Round Top of Pole Mount

Side of Pole Mount

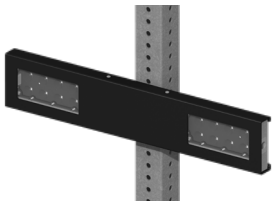
PANEL*	LENGTH	WIDTH
20 W**	18.5" (470 mm)	13.6" (345 mm)
50 W	26.3" (668 mm)	21.2" (538 mm)
80 W	30.7" (780 mm)	26.5" (672 mm)

* Carmanah will conduct a site assessment and provide an Solar Power Report to determine the correct solar panel and battery size.

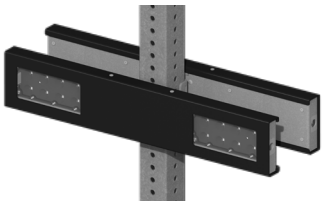
** Only available in a Side of Pole configuration.

LIGHT BAR CONFIGURATION

Uni-directional Configuration



Bi-directional Configuration



ACTIVATION OPTIONS

Standard Pushbutton

Audible Pushbutton Station

Passive Activation Sensor

BEACON SPECIFICATIONS

Optical	MUTCD interim approval IA-21 and MUTCDC compliant
	Purpose-built light bar optics = maximum efficiency and no stray light Exceeds SAE J595 class 1 intensity by 2.5 to 3x when used as recommended 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, dusk-to-dawn operation
	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 E.g., for relay control of overhead lighting
	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
Power System	Solar or AC-powered
	AC: 100-240 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: 35, 55, 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 Optional padlockable latch
	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	-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
	Passive activation: microwave-based sensor detects pedestrian
Warranty	**5-year limited warranty, 1-year limited on batteries**

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.

Document: DATA_TRA_SC315-G_RevC

Crosswalk Add-Ons

Available Safety Enhancements

StreetHub™ Remote Monitoring

Monitor crosswalk beacons from anywhere, plus collect data, manage alerts, and more—all without having to make a manual site visit.

Learn more about StreetHub

ADA Accessible Crosswalks

Our crosswalk systems use pushbuttons and activation methods that are compliant to ADA, PROWAG and MUTCD standards and guidelines.

Learn more about ADA requirements

Overhead Lighting for Crosswalks

Pedestrian-scale lighting integrates seamlessly with our crosswalk systems, providing uniform light to help drivers detect crossing pedestrians.

Learn more about overhead lighting

LED Enhanced Signs

Add LED Enhanced Signs to an RRFB or circular crosswalk beacon system to further strengthen the safety message to drivers.

Learn more about LED crosswalk signs

Circular Beacons

Crosswalk Beacon Comparison Chart

Click a product image to visit the product page on our website

FEATURES	R820-E	R820-F	R820-G
Power options	DC	DC	DC or AC
Solar panel	15 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, Yellow, Green, Natural Aluminum
Interactive user interface	Yes	Yes	Yes
Battery options	14 Ah (2x 7 Ah)	18, 36 Ah	35, 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, Audible APS	ADA-Compliant, Audible APS	ADA-Compliant, Audible APS
Maximum push buttons	2	2	2
Passive detection sensor available	No	Yes	Yes
Wireless communication between beacons	Yes	Yes	Yes
StreetHub remote connectivity option	No	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

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School Zones

Attract driver attention where it matters most

Flashing school zone signs are active traffic control devices that can help condition motorists to change their behavior when the devices are activated. By adding a flashing beacon to a school zone speed limit sign, drivers are told when they need to adjust their speed—no guesswork required.

Combine school zone flashing beacons with other traffic safety products for a complete school zone safety solution.

Areas with flashing school zone signs had average driver speeds **18% to as high as 96%** than locations with "when children are present" and "when flagged" signs.

Configure a school zone beacon

Flashing Beacons (SZBs)

Radar Speed Signs PAGE 31

LED Flashing Signs PAGE 49

Solar Sizing Matters

carmanah®

Our beacons and signs are the most reliable and brightest on the market because we're experts at sizing-up solar.

How do we do it? It's called a Solar Power Report (SPR), and it's calculated by your site location and the profile of each unique installation site.

Our Solar Power Report takes into account environmental factors and product settings.

Once completed, the Solar Power Report lets us know what size of solar kit is sustainable year-round, or whether AC power options maybe required for that unique location.

Watch our video on how we prove solar performance with our Solar Power Report.

Learn more and request an SPR

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Our School Zone Site Assessment begins with these questions

carmanah®

Specifying the beacon for your location

1. What flashing beacon system is required?

2. Is the flashing beacon system required to meet ITE intensity?

3. How many hours per day and days per week is the system required to operate?

4. Where will the system be installed? (City/Town/County or Latitude/Longitude Coordinate)

5. Will there be any shading at the install site? If yes, please provide the exact Latitude/ Longitude coordinates, street address, or Google street view.

6. How many LED modules are required per pole?

7. What size of LED modules? (8" or 12")

8. How would you like to schedule the beacon? (Internal calendar, time switch, remote programming)?

We simplify planning

Contact us to get your Solar Power Report and purchase specifications.

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R829 Series

School Zone Beacon Comparison Chart

carmanah®

FEATURES	R829-E	R829-F	R829-G
Power options	DC	DC	DC or AC
Solar panel	15 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, Yellow, Green, Natural Aluminum
Interactive user interface	Yes	Yes	Yes
Battery options	14 Ah (2x 7 Ah)	18, 36 Ah	35, 75, 100 Ah
Maximum beacons	2	4	4
Signal housing colors	Black, Yellow, Green	Black, Yellow, Green	Black, Yellow, Green
MUTCD, ITE, and 1.7x ITE intensity	Yes	Yes	Yes
MUTCD and ITE-compliant chromaticity and output shape	Yes	Yes	Yes
MUTCD-compliant flash pattern	Yes	Yes	Yes
Alternate flash patterns	Yes	Yes	Yes
LED modules, yellow, 8” or 12”	Yes	Yes	Yes
LED embedded signs	Yes	Yes	Yes
Wireless communication	Yes	Yes	Yes
Internal Carmanah calendar	Yes	Yes	Yes
Third-party time clock compatible	Yes, RTC	Yes, RTC or AI	Yes, RTC or AI
StreetHub remote connectivity option	No	Yes	Yes
Manual override switch	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

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R829-E

Solar-Powered School Zone Flashing Beacon Data Sheet

carmanah®

GO TO PRODUCT PAGE ON WEBSITE

Beacons decrease vehicle speeds by 5 to 7 mph in school zones:

- Highest intensity output in the industry
- MUTCD and Buy America compliant
- Compact and lightweight solar engine
- Solar Power Report™ (SPR) prepared for every location to ensure battery longevity

Superior Design and Technology

The R829-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 R829-E to handle all school zone and speed limit sign 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 school zones and speed limit signs in minutes, and new installations can be completed without the cost of larger poles, new bases, and trenching.

Calendar

Schedule beacon operation with our easy software-based calendar program.

Advanced User Interface

The R829-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. Optional wireless connection enables one beacon's calendar settings to control multiple school zone beacons.

Reliable

Every solar-powered model is solar-sized by location to ensure year-after-year operation. Carmanah includes a Solar Power Report to prove sustainability over a 12-month period.

MUTCD compliant

Buy America compliant

5-year limited warranty

Solar-sized for every location

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R829-E

Solar-Powered School Zone Flashing Beacon Data Sheet

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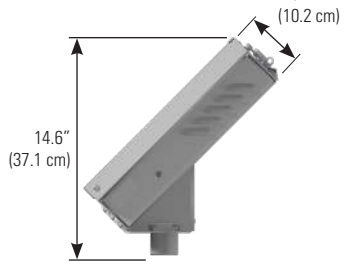
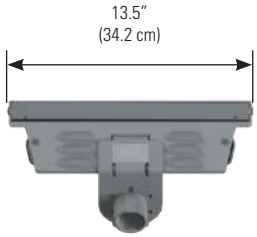
SOLAR ENGINE DIMENSIONS

Side View



Bottom View



SOLAR ENGINE MOUNTING

2.0"- 2.5" Perforated Square Pole Mount

2.38" - 2.88" Diameter Round Pole Mount

3.5" - 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

Triple – Alternating Flashing

Other beacon mounting options are available. Contact Carmanah for more information.

BEACON SPECIFICATIONS

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

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, dusk-to-dawn operation
	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	Optional encrypted, wireless radio with 2.4 GHz mesh technology
	Optional radio allows calendar program, manual override switch, or input device from one system to remotely control other systems
	User-selectable multiple channels to group different beacons and ensure a robust wireless signal
	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	Internal time clock: calendar programming via our simple software
	Manual override switch: allows local control of beacons
	Junction box: lockable, hinged door, corrosion-resistant aluminum enclosure allows easy calendar programming and access to manual override switch
Warranty	**5-year limited warranty, 1-year limited on batteries**

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

Document: DATA_TRA_R829-E_RevC

R829-F

Solar-Powered School Zone Flashing Beacon Data Sheet

carmanah®

GO TO PRODUCT PAGE ON WEBSITE

Beacons decrease vehicle speeds by 5 to 7 mph in school zones:

- Highest intensity output in the industry
- MUTCD and Buy America compliant
- Compact and lightweight solar engine
- Solar Power Report™ (SPR) prepared for every location to ensure battery longevity

Superior Design and Technology

The R829-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 R829-F to work with third-party time clocks and remote monitoring, as well as operate at higher intensities 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 school zones and speed limit signs in minutes, and new installations can be completed without the cost of larger poles, new bases, and trenching.

Calendar Operation

Schedule beacon operation with our easy software-based calendar program, or use third-party time clocks for local or remote control.

Advanced User Interface

The R829-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. Optional wireless connection enables one beacon's calendar settings to control multiple school zone beacons.

Reliable

Every solar-powered model is solar-sized by location to ensure year-after-year operation. Carmanah includes a Solar Power Report to prove sustainability over a 12-month period.

MUTCD compliant

Buy America compliant

5-year limited warranty

Solar-sized for every location

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R829-F

Solar-Powered School Zone Flashing Beacon Data Sheet

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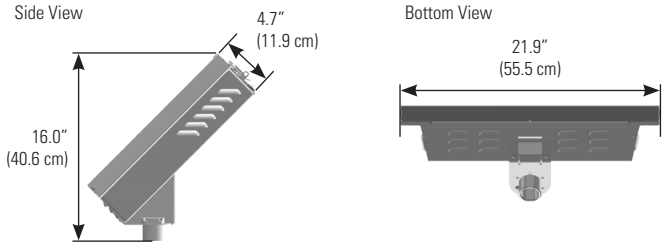
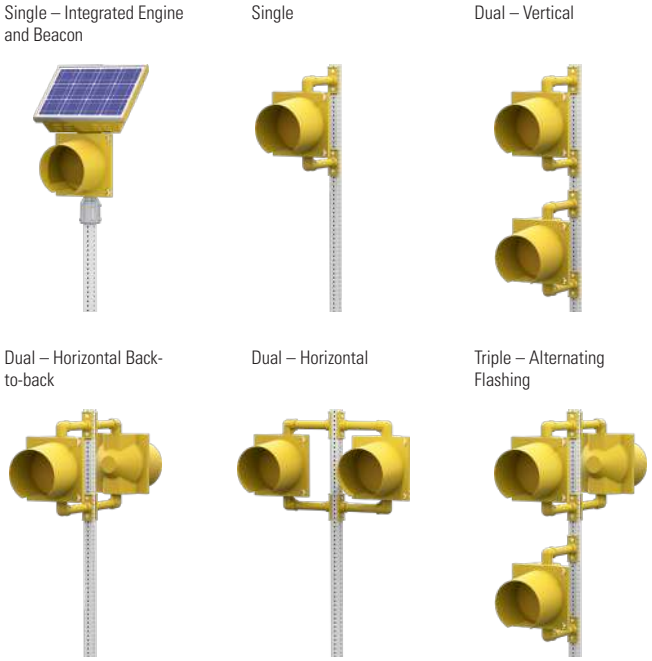
SOLAR ENGINE DIMENSIONS



SOLAR ENGINE MOUNTING

BEACON MOUNTING



Other beacon mounting options are available. Contact Carmanah for more information.

BEACON SPECIFICATIONS

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

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, dusk-to-dawn operation
	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	Optional encrypted, wireless radio with 2.4 GHz mesh technology
	Optional radio allows calendar program, manual override switch, or input device from one system to remotely control other systems
	User-selectable multiple channels to group different beacons and ensure a robust wireless signal
	Instantaneous wireless activation: <150 ms
	Wireless range: 1000 ft (305 m)
	Integrated, vandal-resistant 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 36 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 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	Internal time clock: calendar programming via our simple software
	Also compatible with 3rd-party time clocks: • Applied Information AI 500-070B • Temple FCU 500-071 (FL only) • RTC AP21, AP22, CPR2102, and M2M modem Other time clocks may also be compatible.
	Manual override switch: allows local control of beacons
	Junction box: lockable, hinged door, corrosion-resistant aluminum enclosure allows easy calendar programming and access to manual override switch
Warranty	**5-year limited warranty, 1-year limited on batteries**

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

Document: DATA_TRA_R829-F_RevC

R829-G

Cabinet-Based School Zone Flashing Beacon Data Sheet

carmanah®

GO TO PRODUCT PAGE ON WEBSITE

Beacons decrease vehicle speeds by 5 to 7 mph in school zones:

- Highest intensity output in the industry
- MUTCD and Buy America compliant
- Solar or AC-powered
- Solar Power Report™ (SPR) prepared for every location to ensure battery longevity

Superior Design and Technology

The R829-G is a cabinet-based system with a separate, high-power solar panel. This design enables the R829-G to work with third-party time clocks and remote monitoring, as well as operate at higher intensities in challenging environments. MUTCD flash patterns, available ITE intensity, and multiple configurations enable the R829-G to handle all school zone and speed limit sign applications.

Easy Installation

All components, including the battery or AC power supply, Energy Management System (EMS) and optional time clocks 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.

Calendar Operation

Schedule beacon operation with our easy software-based calendar program, or use third-party time clocks for local or remote control.

Advanced User Interface

The R829-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. Optional wireless connection enables one beacon's calendar settings to control multiple school zone beacons.

Reliable

Every solar-powered model is solar-sized by location to ensure year-after-year operation. Carmanah includes a Solar Power Report to prove sustainability over a 12-month period.

MUTCD COMPLIANT

MUTCD compliant

Buy America compliant

5 YEARS

5-year limited warranty

SOLAR POWER 12 REPORT

Solar-sized for every location

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R829-G

Cabinet-Based School Zone Flashing Beacon Data Sheet

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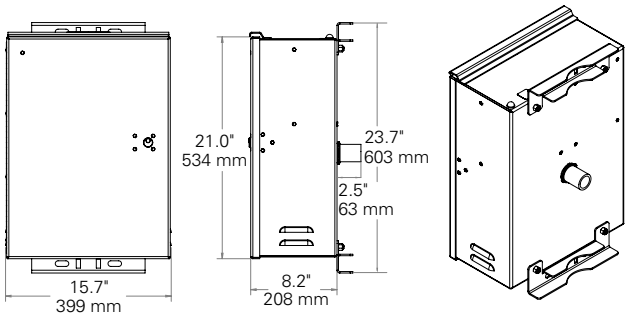
CABINET DIMENSIONS



SOLAR PANELS AND MOUNTS

3.5" - 4.5" Diameter Round Top of Pole Mount

Side of Pole Mount

PANEL*	LENGTH	WIDTH
20 W**	18.5" (470 mm)	13.6" (345 mm)
50 W	26.3" (668 mm)	21.2" (538 mm)
80 W	30.7" (780 mm)	26.5" (672 mm)

* Carmanah will conduct a site assessment and provide an Solar Power Report™ to determine the correct solar panel and battery size.

** Only available in a Side of Pole configuration.

BEACON MOUNTING

Dual Beacon

Quad Beacon

BEACON SPECIFICATIONS

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

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, dusk-to-dawn operation
	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 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 E.g., for relay control of overhead lighting
	Activation counts and data reporting via OBUI or optional USB connection
Beacon Communication	Optional encrypted, wireless radio with 2.4 GHz mesh technology
	Optional radio allows calendar program, manual override switch, or input device from one system to remotely control other systems
	User-selectable multiple channels to group different beacons and ensure a robust wireless signal
	Instantaneous wireless activation: <150 ms
	Wireless range: 1000 ft (305 m)
	Integrated, vandal-proof antenna
Power System	Solar or AC-powered
	AC: 100-240 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: 35, 55, 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 Optional padlockable latch
	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	Internal time clock: calendar programming via our simple software
	Also compatible with 3rd-party time clocks: • Applied Information AI 500-070B • Temple FCU 500-071 (FL only) • RTC AP21, AP22, CPR2102, and M2M modem Other time clocks may also be compatible.
	Manual override switch: allows local control of beacons
	Junction box: lockable, hinged door, corrosion-resistant aluminum enclosure allows easy calendar programming and access to manual override switch
Warranty	**5-year limited warranty, 1-year limited on batteries**

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.

Document: DATA_TRA_R829-G_RevJ

R829 Series

School Zone Scheduling Options

APPLIED INFORMATION:
AI 500-070B

- Time clock with cellular modem
- Utilizes AI's Glance software
- Remote scheduling
- **Compatible with: R829-F, R829-G**

RTC MANUFACTURING:
AP22

- Time clock
- Scheduling possible through radio, cellular, ethernet, keyboard, or laptop
- **Compatible with: R829-F, R829-G**

CARMANAH:
CALENDAR SOFTWARE

- Computer program
- Site scheduling with laptop
- Includes uploading housing kit
- **Compatible with: R829-E, R829-F, R829-G**

CARMANAH:
STREETHUB REMOTE CONNECTIVITY

- Ships with out-of-the-box remote connectivity and scheduling
- Utilizes AI's Glance web browser-based software
- **Compatible with: R829-F, R829-G**

Learn more about our StreetHub model and Glance™ software option.

1.844.412.8395 | traffic@carmanah.com

School Zone Calendar

R829 Series Calendar Software

Carmanah's School Zone Calendar software lets you easily schedule and customize your school zone beacon's operating hours. Every R829 series beacon comes prewired for this add-on.

- Program up to 510 days in advance of beacon flashing schedules. Create 1-8 unique schedules each with 1-8 events per day.
- Includes uploading housing kit for programming at the base of the pole
- Optional 32' USB extension harness lets you program while in your vehicle

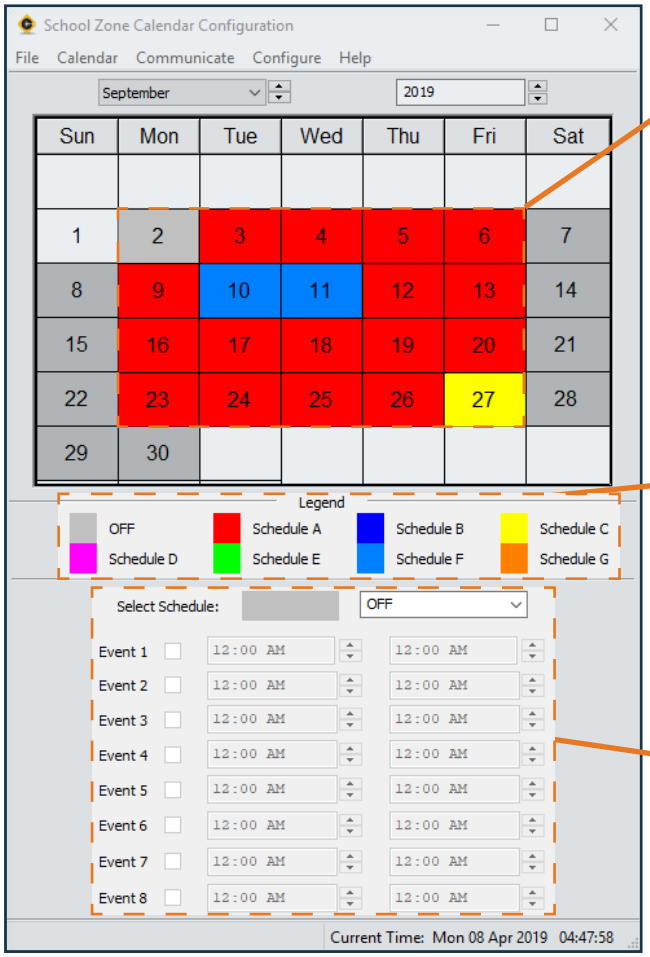
COMPATIBLE WITH

R829-E, R829-F and R829-G school zone flashing beacons

SYSTEM REQUIREMENTS

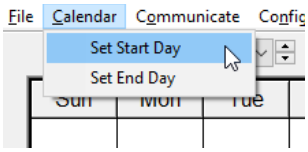
Windows 7 or 10 (32- or 64-bit) laptop

PC SOFTWARE: QUICK VIEW



SET EACH DAY

Select which days you want each unique flashing schedule to appear. You can also apply the same schedule to multiple days by navigating to **Calendar > Set Start Day/Set End Day.**



CREATE YOUR SCHEDULES

Create up to 8 daily schedules for regular school hours, shorter days, special events, and more. **Simply select a schedule and add it to a day on the calendar.**

PROGRAM YOUR OPERATING HOURS

Select your on-off time periods for your beacon. Each schedule can be programmed with up to 8 events per day.

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Radar Speed Signs

Refocus driver attention with SpeedCheck® traffic calming solutions

Well-designed radar speed displays are highly effective in getting drivers to slow down in these areas. Also known as driver feedback signs, these traffic calming devices detect the speed of oncoming vehicles and display the driver's speed by flashing bright LED digits. Many municipalities are finding success with speed detection signs, as they support larger traffic calming programs and walkability initiatives.

SpeedCheck is the most recognized radar speed sign in the industry, with thousands of installations across North America. It was the first system with an integrated LED and radar display and it remains a market leader 20+ years later.

Radar speed signs can slow down traffic in school zones from around **5 to as much as 9 MPH.**

- **School & Work Zones**
- **Intersections**
- **Residential streets**
- **Rural highways or dangerous stretches of road**

Build a radar speed sign

SPEEDCHECK-12

Small, Portable Radar Speed Sign Data Sheet

GO TO PRODUCT PAGE ON WEBSITE

Affordable radar speed sign system packed with premium features at no additional cost:

- Calendar/schedule operation
- Data collection with visualization and reporting software
- Mobile app for iOS® and Android™
- Rapid-flashing strobe
- Stealth mode
- On-board diagnostic status and health indicators
- 3-year warranty

SPEEDCHECK-12
12-inch digits for speeds less than 45 mph (70 km/h)

Fully Compliant, Ultra-clear Display

Compliant to MUTCD standards for legibility, including LED color, character and letter height. The bright LED display uses 12-inch digits against a background designed for high-contrast visibility that prevents "88" ghosting—ensuring readability in all weather and lighting conditions. The unique safety mask limits the viewing angle to prevent drivers from watching the display as they pass.

Long-lasting, Reliable Operation

The LED display is housed within a durable, weatherproof aluminum unit and is shielded with a tough polycarbonate window for added vandalism protection. Every solar-powered model is solar-sized by location to ensure year-after-year operation. Carmanah includes a Solar Power Report to prove sustainability over a 12-month period.

Easy Installation and Connectivity

The SpeedCheck® sign arrives ready to work out of the box. Its modular, lightweight design and built-in handle allows a single person to install on a pole or flat surface. Bluetooth® allows for quick connectivity and setup via the SpeedCheck Manager mobile app or PC software. A StreetHub™ model comes factory prewired and pretested for remote communication—enabling cloud-based access within minutes. Carmanah's comprehensive support system includes product support technologists and our 24/7 on-demand Product Support Center.

MUTCD compliant

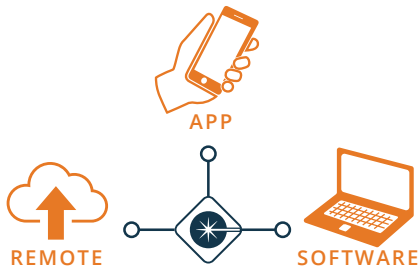
Buy America compliant

3-year limited warranty

Solar-sized for every location

Up to 21 days battery run time

Up to 1000 feet radar detection



CONNECTIVE CAPABILITIES

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SPEEDCHECK-12

Small, Portable Radar Speed Sign Data Sheet

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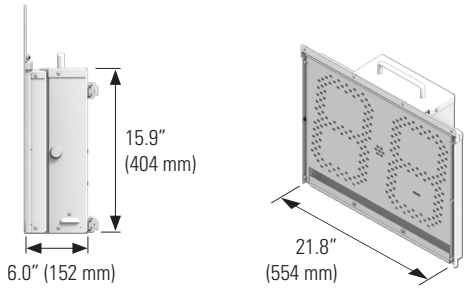
LED DISPLAY



LED Display and Strobe	Meets MUTCD legibility standards for character height and LED color for roadways with speed limits under 45 mph
	Seven-segment digit design using 224 amber LEDs LEDs automatically dim during nighttime operation, minimizing light bounce into neighboring windows
	Includes rapid-flashing strobe with white LEDs at the center of the display (with ON/OFF setting)
	Includes stealth mode for data collection
Radar	Detection range up to 800 ft; extended range option available
	Single-direction, K Band Doppler radar (+/- 1 mph) with 12° radar beam width
Construction	Weatherproof, gasketed enclosure with vents for ambient air transfer
	Corrosion-resistant aluminum chassis with stainless steel hardware
	3/16" polycarbonate window protects digital display from weather and vandalism
	Keyed access prevents sign removal and battery theft
Weight	15 lbs (6.8 kg) without batteries

COMMUNICATION

Local	Bluetooth mobile app and PC software (SpeedCheck Manager)
Remote	Optional StreetHub model includes fully integrated monitoring unit from the factory and Glance cloud-based software for two-way communication, reporting and monitoring

POWER OPTIONS

Battery	Up to 21 days battery run time (3,000 ADT)
	Includes external battery charger
	Maintenance-free, non-proprietary AGM batteries offer the widest temperature range and longest life
	Batteries can be easily replaced at low cost
Solar	12 VDC operation, solar sized to specific geographic location Includes 12-month Solar Power Report to ensure system sustainability
	System designed for 5+ year battery life
AC	100-240 VAC in standard configurations

INCLUDED WITH EVERY SIGN

Software and Mobile App	SpeedCheck Manager mobile app for quick changes to high-touch settings, via Bluetooth
	SpeedCheck Manager PC software for all setup and programming options, including calendar scheduling, data collection, via Bluetooth
	Traffic Analyzer software for data visualization and reporting
Hardware and Installation Setup	High-powered Bluetooth dongle for up to 50 ft range between SpeedCheck sign and PC
	Radar installation kit with alignment tool
Warranty	3-year limited warranty on LED display
	1-year limited warranty on batteries
Support	Carmanah's North American product support technologists available for solution building, solar sizing and troubleshooting
	24/7 access to Carmanah's online Product Support Center database

"YOUR SPEED" STATIC SIGN

Sign	Meets MUTCD legibility standards for color, character and height
Sheeting	3M High Intensity Prismatic or Diamond Grade retroreflective sheeting and components
Color	Available in yellow, fluorescent yellow/green, white, and orange

24" x 22"
(610 mm x 559 mm)
*Not FHWA MUTCD compliant

30" x 24"
(762 mm x 610 mm)

30" x 36"
(762 mm x 914 mm)

LED DISPLAY MOUNTS

Standard Banding/ Flat Surface

Through Bolt (2" - 2.5" Square Poles)

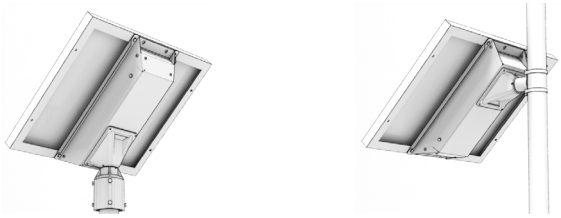
Through Bolt (2.38" - 2.88" & 4.5" Diameter Round Poles)

Band Clamps (2.38" - 4.75" & 5.5 - 8.25" Diameter Round Poles)

SOLAR KITS AND MOUNTS

Top of Pole Mount

Side of Pole Mount



PANEL	LENGTH	WIDTH
30 W	21.5" (545 mm)	15.7" (400 mm)
50 W	26.3" (668 mm)	21.2" (538 mm)

LEARN MORE ABOUT THE PRODUCT

- What's a Solar Power Report?
- Visit the Product Support Center

Download on the App Store GET IT ON Google Play

Document: DATA_TRA_SPEEDCHECK-12-radar-speed-sign_RevA

SPEEDCHECK-15/18

Radar Speed Sign Data Sheet

carmanah®

Quality radar speed sign systems packed with features to maximize effectiveness:

- Large 15” or 18” LED digits with various static sign sizes
- Optional “SLOW DOWN” message, strobes and external beacons available
- High-contrast display provides the greatest readability at a distance
- Stealth mode
- Calendar/schedule operation
- Data collection with visualization and reporting software
- 3-year warranty

Fully Compliant, Ultra-clear Display

Compliant to MUTCD standards for legibility, including LED color, character and letter height. The bright LED displays use 15-inch and 18-inch digits against a background designed for high-contrast visibility that prevents “88” ghosting—ensuring readability in all weather and lighting conditions. The unique safety mask limits the viewing angle to prevent drivers from watching the display as they pass. The “SLOW DOWN” message can be programmed to flash at user-defined speed thresholds.

Long-lasting, Reliable Operation

The LED display is housed within a durable, weatherproof aluminum unit and is shielded with a tough polycarbonate window for added vandalism protection. Every solar-powered model is solar-sized by location to ensure year-after-year operation. Carmanah includes a Solar Power Report to prove sustainability over a 12-month period.

Easy Installation and Connectivity

The modular design makes it easy to repair using standard tools—without removing the device from the pole. Bluetooth® allows for quick connectivity and setup via the SpeedCheck Manager PC software. A StreetHub™ model comes factory prewired and pretested for remote communication—enabling cloud-based access within minutes. Carmanah’s comprehensive support system includes product support technologists and our 24/7 on-demand Product Support Center.

SPEEDCHECK-15 PRODUCT PAGE

SPEEDCHECK-18 PRODUCT PAGE

SPEEDCHECK-15
15-inch digits for speeds less than 45 mph (70 km/h)

SPEEDCHECK-18
18-inch digits for speeds equal/greater than 45 mph (70 km/h)

MUTCD compliant

Buy America compliant

3-year limited warranty

Solar-sized for every location

Up to 1000 feet radar detection

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SPEEDCHECK-15/18

Radar Speed Sign Data Sheet

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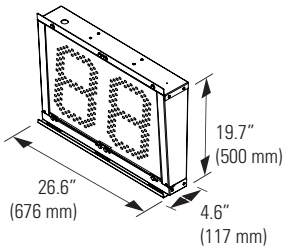
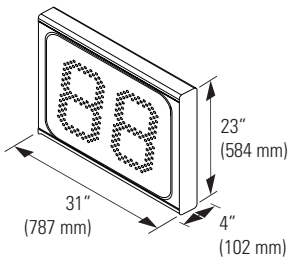
LED DISPLAY

SPEEDCHECK-15



SPEEDCHECK-18



LED Display	Meets MUTCD legibility standards for character height and LED color for roadways with speed limits under 45 mph and 45 mph and over
	Seven-segment digit design using amber LEDs LEDs automatically dim during nighttime operation, minimizing light bounce into neighboring windows
	Includes stealth mode for data collection
Radar	3rd-party tested radar detection range to 1000 ft.
	Single-direction, K Band Doppler radar (+/- 1 mph) with 12° radar beam width
Construction	Corrosion-resistant aluminum chassis with stainless steel hardware
	1/4" polycarbonate window protects digital display from weather and vandalism

OPTIONAL PRODUCT FEATURES

Slow Down	Flashes MUTCD-compliant "SLOW DOWN" message when drivers exceed user-defined speed thresholds; available in yellow or red* LEDs
Outputs	Triggers external devices, such as flashing beacons, strobes, or cameras by speed threshold or schedule, or from centralized remote location Strobe*: rapid-flashing strobe with white LEDs or red/blue LEDs (for 15" display only) Beacons: 12" (305 mm) or 8" (203 mm) diameter LED modules, yellow or red
Inputs	Allows external devices to manage display operation with external contact closure and the included wiring harness

* Not FHWA MUTCD compliant

LED DISPLAY MOUNTS

Standard Banding or U-Bolt

Flat Bracket

COMMUNICATION AND DATA COLLECTION

Local Communication	Bluetooth, direct serial (cable) and third-party device communication options available
Remote Monitoring	Optional StreetHub model includes fully integrated monitoring unit from the factory and Glance cloud-based software for two-way communication

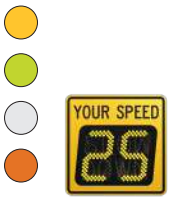
INCLUDED WITH EVERY SIGN

Software	SpeedCheck Manager PC software for all setup and programming options, including calendar scheduling, data collection Traffic Analyzer software for data visualization and reporting
Hardware and Installation Setup	High-powered Bluetooth dongle for up to 50 ft range between SpeedCheck sign and PC
	Radar installation kit with alignment tool and foam cone
Warranty	3-year limited warranty on LED display
	1-year limited warranty on batteries
Support	Carmanah's North American product support technologists available for solution building, solar sizing and troubleshooting
	24/7 access to Carmanah's online Product Support Center database

"YOUR SPEED" STATIC SIGN

Sign	Meets MUTCD legibility standards for color, character and height
Sheeting	3M High Intensity Prismatic or Diamond Grade retroreflective sheeting and components
Color	Available in yellow, fluorescent yellow/green, white, and orange

SPEEDCHECK-15



30" x 30"
(762 mm x 762 mm)

42" x 30"
(1067 mm x 762 mm)

SPEEDCHECK-18

48" x 36"
(1219 mm x 914 mm)

60" x 48"
(1524 mm x 1219 mm)

POWER OPTIONS

Solar	12 VDC operation, solar-sized to specific geographic location Includes 12-month Solar Power Report to ensure system reliability
	System designed for 5+ year battery life
AC	100-240 VAC in standard configurations

BATTERY AND CONTROL CABINET

Construction	Weatherproof, gasketed cabinet with vents for ambient air transfer tested to NEMA 3R
	Corrosion-resistant aluminum chassis with stainless steel hardware
	Lockable, hinged door with #2 lock Optional padlockable latch
	Raw aluminum finish or yellow, black, or green powder coated
Dimensions	15.7" x 8.2" x 21.0" (399 mm x 208 mm x 534 mm)

SOLAR PANELS AND MOUNTS

Top of Pole Mount

Side of Pole Mount

PANEL	LENGTH	WIDTH
50 W	26.3" (668 mm)	21.2" (538 mm)
80 W	30.7" (780 mm)	26.5" (672 mm)
170 W	59.1" (1500 mm)	26.3" (668 mm)

LEARN MORE ABOUT THE PRODUCT

- What's a Solar Power Report?
- Visit the Product Support Center

Document: DATA_TRA_SPEEDCHECK-15-18-radar-speed-sign_RevA

SPEEDCHECK®

Advisory Speed Signs Data Sheet

carmanah®

GO TO PRODUCT PAGE ON WEBSITE

Advisory speed signs have an immediate and long-lasting impact on driver behavior, alerting drivers to an advised speed for a potential road hazard or condition.

- Industry-leading high-contrast display technology for visibility in all weather and lighting conditions
- MUTCD and Buy America compliant system
- Most recognized radar speed sign in the industry for 20+ years
- Solar Power Report™ (SPR) prepared for every location to ensure battery longevity

Ultra-clear Light Output

Compliant to MUTCD standards for legibility, including LED color, character and letter height. The bright LED displays use 15-inch and 18-inch digits against a background designed for high-contrast visibility that prevents "88" ghosting—ensuring readability in all weather and lighting conditions. The unique safety mask limits the viewing angle to prevent drivers from watching the display as they pass. The "SLOW DOWN" message can be programmed to flash at user-defined speed thresholds.

Easy Installation and Durable Construction

The modular design makes it easy to repair using standard tools—without removing the device from the pole. The durable radar device is constructed with heavy 11-gauge welded aluminum and stainless steel and brass hardware. The vandal-resistant design can absorb up to two inches of impact deflection without damage to internal components.

Advanced User Interface

Our SpeedCheck sign comes with an on-board user interface for quick configuration and optional status monitoring. Using a shared platform design, all SpeedCheck products use the same device manager and controller, making it easy to quickly add many optional features to fit your application.

Reliable

Every solar-powered model is solar-sized by location to ensure year-after-year operation. Carmanah includes a Solar Power Report to prove sustainability over a 12-month period.

Advisory Alert Options

Static Speed + Flashing Digits
Displays advised speed at all times. Digits flash when drivers exceed advised speed.

Static Speed + Slow Down Message
Displays advised speed at all times. Flashes "Slow Down" when drivers exceed advised speed.

Blank Sign + Slow Down Message
No advised speed displayed. Flashes "Slow Down" when drivers exceed advised speed.

MUTCD compliant

Buy America compliant

3-year limited warranty

Solar-sized for every location

Up to 1000 feet radar detection

1.844.412.8395 | traffic@carmanah.com

SPEEDCHECK®

Advisory Speed Signs Data Sheet

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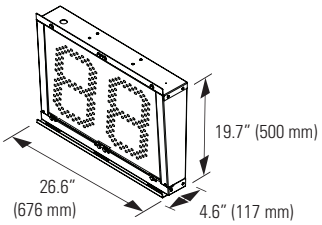
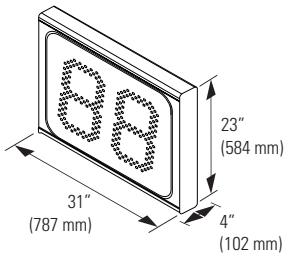
DISPLAY ENCLOSURE DIMENSIONS

SPEEDCHECK-15



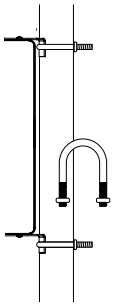
SPEEDCHECK-18



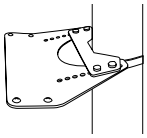
DISPLAY ENCLOSURE MOUNTING

Standard Banding

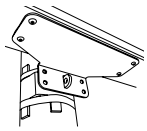
U-Bolt (Flat/ Square poles)



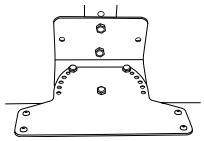
Tilt Bracket (for vertical adjustments)



Quick Change (Portable)



Flat bracket



SOLAR PANELS AND MOUNTS

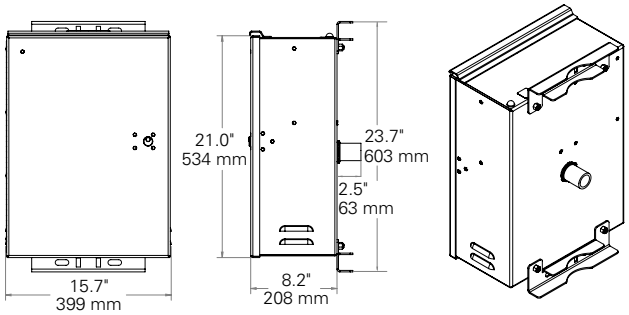
Top of Pole Mount

Side of Pole Mount

PANEL	LENGTH	WIDTH
50 W	26.3" (668 mm)	21.2" (538 mm)
80 W	30.7" (780 mm)	26.5" (672 mm)
170 W	59.1" (1500 mm)	26.3" (668 mm)

* Carmanah will conduct a site assessment and provide an Solar Power Report to determine the correct solar panel and battery size.

CABINET DIMENSIONS



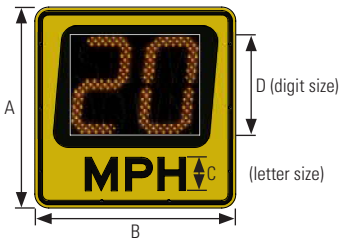
SYSTEM SPECIFICATIONS

Display	MUTCD and MUTCDC compliant
	Amber LEDs Seven-segment LED digit design for maximum digit recognition LEDs automatically dim during nighttime operation, minimizing light bounce into neighboring windows
	Unique safety masking design limits display view from the side, discouraging drivers from rubbernecking to watch the display as they drive past
	Ultra-clear contrast delivers superior viewability in all lighting conditions No "88" digit ghosting even in bright sunlight
Power	100-240 VAC in standard configurations
	12 VDC for battery or solar system operation
	Solar sized for specific geographic location and sign application
	3.5 W draw for typical daytime displayed number, traffic, and local illumination
	50, 80, or 170 W high-efficiency photovoltaic solar panel
Enclosure	Ventilated, weatherproof NEMA 3R enclosure
Static Sign Construction	3M High Intensity Prismatic or Diamond Grade retroreflective sheeting and components Available in 3931 yellow, 3983 fluorescent yellow/green, 3930 white, and 3934 orange; others available
Communication	Bluetooth, StreetHub remote connectivity, ethernet, and third-party device communication options available
Software	SpeedCheck Manager: simple setup and programming for all display parameters
	Scheduler: manages unlimited schedules and modes on a calendar with a 2-year exception list
	Traffic Analyzer: on-board data logger collects date, time and speed for over 200,000 target vehicles; raw data in .csv, not binned; generates easy pre-defined speed compliance reports
Cabinet Construction	Weatherproof, gasketed enclosure with vents for ambient air transfer (NEMA 3R)
	Lockable, hinged door with #2 lock Optional padlockable latch
	Corrosion-resistant aluminum with stainless steel hardware
Environmental	-40 to 167° F (-40 to 75° C) system operating temperature
	5-30 Hz 3-axis vibration
	FCC 15.107 and 15.109 Class A radiated and conducted emissions compliance
	FCC part 15 low-power radar device
Warranty	**3-year limited warranty**

OPTIONAL PRODUCT FEATURES

Slow Down	Flashes MUTCD-compliant "Slow Down" message when drivers exceed user-defined speed thresholds
Outputs	Triggers external devices, such as flashing beacons, strobes, or cameras by speed threshold or schedule, or from centralized remote location Beacons: 12 in (305 mm) or 8 in (203 mm) diameter LED modules, yellow or red
Inputs	Allows external devices to manage display operation with external contact closure and the included wiring harness

ADVISORY SPEED SIGN DIMENSIONS



SIGN	A	B	C	D
15-inch	30" (762 mm)	30" (762 mm)	5" (127 mm)	15" (381 mm)
18-inch	36" (914 mm)	36" (914 mm)	5" (127 mm)	18" (457 mm)

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

Document: DATA_TRA_SPEEDCHECK-advisory-speed-signs_RevC

SPEEDCHECK®

Variable Speed Limit Sign Data Sheet

GO TO PRODUCT PAGE ON WEBSITE

Variable speed limit signs display scheduled and spontaneous adjustments to posted speed limits using high-visibility illuminated digits, increasing compliance and safety in school zones, work zones, highways, and more.

- Industry-leading high-contrast display technology for visibility in all weather and lighting conditions
- Local and remote programming options
- Most recognized radar speed sign in the industry for 20+ years
- Built-in radar collects speed data and vehicle counts
- MUTCD and Buy America compliant

SPEEDCHECK-15-VS
15-inch-digit model with optional S5-1 school zone speed limit sign

SPEEDCHECK-18-VS
18-inch-digit model with standard R2-1 speed limit sign for speeds over 45 mph (70 km/h)

Superior Design and Technology

The SpeedCheck variable speed limit sign can be used to alert drivers to modified speed limits necessitated by changing weather and traffic conditions using a highly visible black-and-white LED display.

Available in 15-inch and 18-inch digit sizes, the display uses a 7-segment design with high-contrast technology for visibility in all weather and lighting conditions. SpeedCheck's proprietary safety mask limits the viewing angle to prevent drivers from watching the display as they pass.

Easy Installation and Durable Construction

The display's modular design makes the model easy to install and maintain using standard tools. Designed to withstand the elements, the display is constructed with heavy 11-gauge welded aluminum and stainless steel and brass hardware. The vandal-resistant design has been proven to absorb up to two inches of impact deflection without damage to internal components.

Local and Remote Programming and Control

Speed limit changes can be programmed on a schedule or updated on the fly using our SpeedCheck Manager software with either a remote Ethernet or local Bluetooth connection.

MUTCD compliant

Buy America compliant

3-year limited warranty

Solar-sized for every location

Up to 1000 feet radar detection

1.844.412.8395 | traffic@carmanah.com

SPEEDCHECK®

Variable Speed Limit Sign Data Sheet

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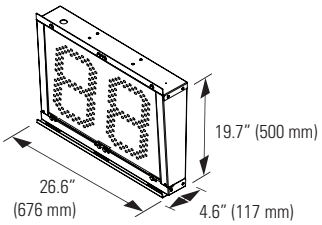
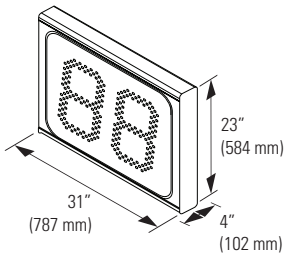
DISPLAY ENCLOSURE DIMENSIONS

SPEEDCHECK-15-VS



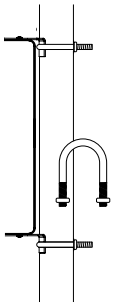
SPEEDCHECK-18-VS



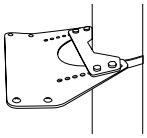
DISPLAY ENCLOSURE MOUNTING

Standard Banding

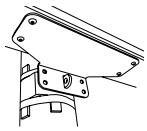
U-Bolt (Flat/ Square poles)



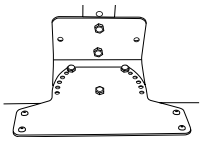
Tilt Bracket (for vertical adjustments)



Quick Change (Portable)



Flat bracket



SYSTEM SPECIFICATIONS

Display	MUTCD and MUTCDC compliant
	White LEDs Seven-segment LED digit design for maximum digit recognition LEDs automatically dim during nighttime operation, minimizing light bounce into neighboring windows
	Unique safety masking design limits display view from the side, discouraging drivers from rubbernecking to watch the display as they drive past
	Ultra-clear contrast delivers superior viewability in all lighting conditions No "88" digit ghosting even in bright sunlight
Power	100-240 VAC in standard configurations
	12 VDC for battery or solar system operation
	Solar sized for specific geographic location and sign application
	3.5 W draw for typical daytime displayed number, traffic, and local illumination
	50, 80, or 170 W high-efficiency photovoltaic solar panel
Enclosure	Ventilated, weatherproof NEMA 3R enclosure
Static Sign Construction	3M High Intensity Prismatic or Diamond Grade retroreflective sheeting and components Available in 3931 yellow, 3983 fluorescent yellow/green, 3930 white, and 3934 orange; others available
Communication	Local Bluetooth or remote Ethernet connection
Software	SpeedCheck Manager: simple setup and programming for all display parameters
Cabinet Construction	Weatherproof, gasketed enclosure with vents for ambient air transfer (NEMA 3R)
	Lockable, hinged door with #2 lock Optional padlockable latch
	Corrosion-resistant aluminum with stainless steel hardware
Environmental	-40 to 167° F (-40 to 75° C) system operating temperature
	5-30 Hz 3-axis vibration
	FCC 15.107 and 15.109 Class A radiated and conducted emissions compliance
	FCC part 15 low-power radar device
Warranty	**3-year limited warranty**

SOLAR PANELS AND MOUNTS

3.5" - 4.5" Diameter Round Top of Pole Mount

Side of Pole Mount

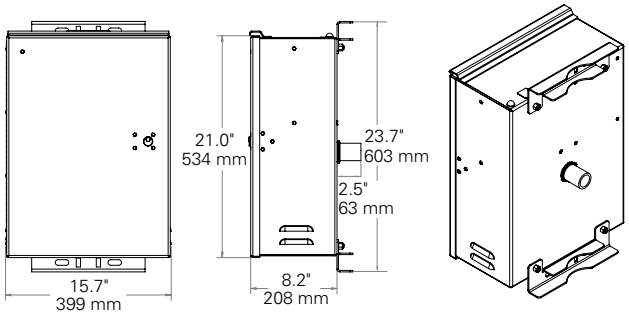
PANEL*	LENGTH	WIDTH
50 W	26.3" (668 mm)	21.2" (538 mm)
80 W	30.7" (780 mm)	26.5" (672 mm)
170 W	59.1" (1500 mm)	26.3" (668 mm)

* Carmanah will conduct a site assessment and provide an Solar Power Report to determine the correct solar panel and battery size.

OPTIONAL PRODUCT FEATURES

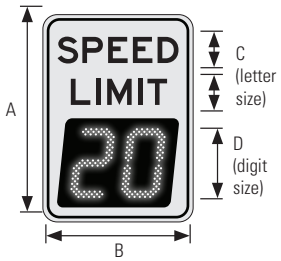
Outputs	Triggers external devices, such as flashing beacons or cameras by speed threshold or schedule, or from centralized remote location Beacons: 12 in (305 mm) or 8 in (203 mm) diameter LED modules, yellow
Inputs	Allows external devices to manage display operation with external contact closure and the included wiring harness

CABINET DIMENSIONS

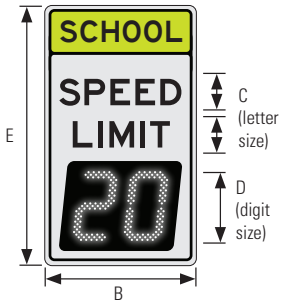


"SPEED LIMIT" SIGN DIMENSIONS

R2-1 Speed Limit Sign



S5-1 School Zone Speed Limit Sign (15-inch model only)



SIGN	A	B	C	D	E
15-inch	42" (1067 mm)	30" (762 mm)	6" (152 mm)	15" (381 mm)	52" (1321 mm)
18-inch	48" (1219 mm)	36" (914 mm)	6.5" (165 mm)	18" (457 mm)	-

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

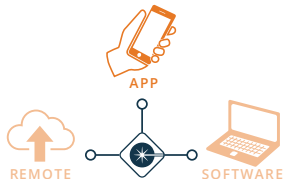
Document: DATA_TRA_SPEEDCHECK-variable-speed-signs_RevB

SpeedCheck® Manager

Mobile App for Device Programming

The SpeedCheck Manager mobile app allows you to quickly adjust the setting defaults your SPEEDCHECK-12 radar speed sign.

- Program the display from up to **100 ft away** with Bluetooth® wireless connection
- Streamlined interface and display settings let you program each sign in less than **five minutes**
- Secure, password-protected access
- Futureproof: ongoing firmware and software updates
- Extensive support included: app links to user guides and 24/7 access to Carmanah's online Product Support Center database



CONNECTIVE CAPABILITIES

INCLUDED WITH EVERY SPEEDCHECK SIGN	
Software and Mobile App	SpeedCheck Manager mobile app for quick changes to high-touch settings
	SpeedCheck Manager PC software for all setup and programming options, including calendar scheduling, data collection
	On-board data logger for collecting vehicle speed data, date and time
	Traffic Analyzer PC software for data visualization, analysis and reporting
Hardware and Installation Setup	USB Bluetooth dongle shipped with every order
	Radar installation kit with alignment tool

COMPATIBLE WITH
SPEEDCHECK-12

SYSTEM REQUIREMENTS
iOS® (version 13 or newer) and Android™ (version 8 or newer) mobile devices

Download on the App Store

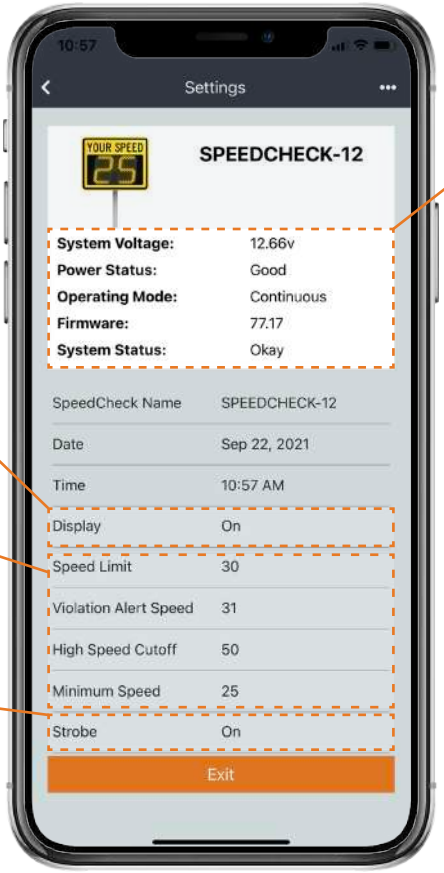
GET IT ON Google Play

MOBILE APP: QUICK VIEW

STEALTH MODE
Turn off the LED display and continue collecting data to compare before and after treatment effectiveness.

SPEED SETTINGS
Set the road's speed limit, the violation alert speed—the speed that triggers the digits to flash—and the minimum and maximum (high speed cutoff) display speeds.

STROBE
Enable the built-in strobe to rapidly flash when drivers exceed a defined speed.



SYSTEM STATUS (read-only)
Check the voltage and power status, operating mode, firmware version and system status.

Mobile app adjustable settings:

- Speed settings: speed limit, violation alert speed, high speed cutoff and minimum display speed
- Strobe ON/OFF
- Stealth mode (display OFF)
- MPH/KPH
- System ID, date and time
- Read-only power and system status

DOWNLOAD THE MANUAL

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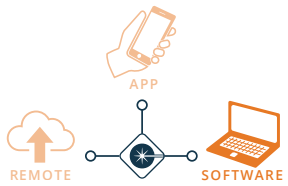
SpeedCheck® Manager

PC Software for Device Programming and Scheduling

carmanah®

The SpeedCheck Manager software allows you to easily set up, program and schedule your SpeedCheck radar speed signs.

- ✔ Program the display from up to **100 ft away** with Bluetooth® wireless connection using our high-powered USB laptop dongle
- ✔ Streamlined interface and display settings let you program each sign in around **five minutes**
- ✔ **Data Logger**: Collect and download vehicle speed data for use in the Traffic Analyzer software
- ✔ **Scheduler**: Set up and manage unlimited operating schedules with a 2-year exception list
- \+ **Inputs/Outputs (optional)**: Configure external devices such as beacons and strobes, or allow external devices to manage display operation



CONNECTIVE CAPABILITIES

INCLUDED WITH EVERY SPEEDCHECK SIGN	
Software and Mobile App	SpeedCheck Manager mobile app for quick changes to high-touch settings
	SpeedCheck Manager PC software for all setup and programming options, including calendar scheduling, data collection
	On-board data logger for collecting vehicle speed data, date and time
	Traffic Analyzer PC software for data visualization, analysis and reporting
Hardware and Installation Setup	USB Bluetooth dongle shipped with every order
	Radar installation kit with alignment tool

COMMUNICATION OPTIONS
Local Bluetooth wireless
Direct serial (cable)*
Remote communication available: please contact Carmanah for options

* Only compatible with SPEEDCHECK-15/18/AS/VS models.

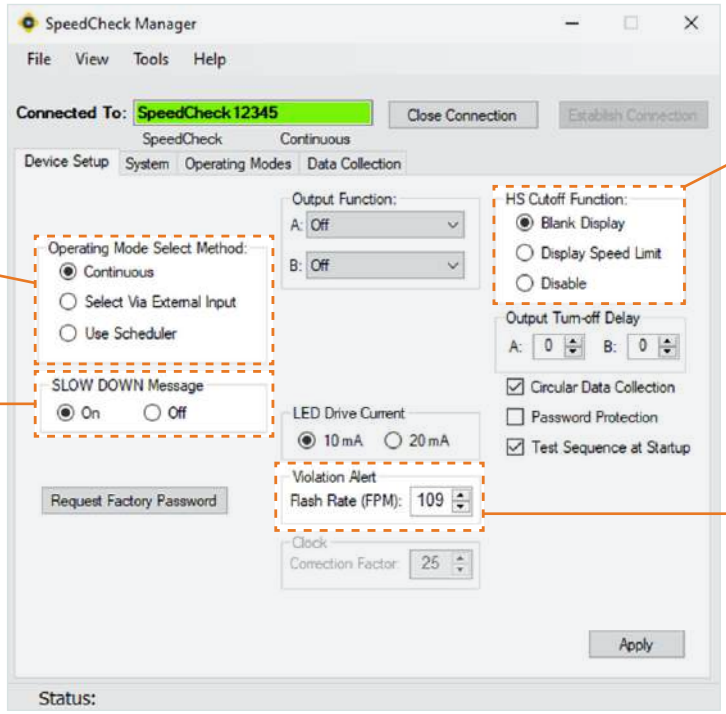
COMPATIBLE WITH
SPEEDCHECK-12/15/18
SPEEDCHECK-AS
SPEEDCHECK-VS

SYSTEM REQUIREMENTS
Windows 7** or 10 (32- or 64-bit) laptop/desktop computer ** A Bluetooth dongle may be required for laptops running Windows 7 and for desktop computers.

PC SOFTWARE: QUICK VIEW

SIGN OPERATION
Run SpeedCheck continuously, from an external device, or using the Scheduler for calendar operation.

SLOW DOWN MESSAGE
Select whether the optional "SLOW DOWN" message will be displayed.



HIGH-SPEED CUTOFF
Choose what happens to the display when drivers reach excessive speeds: blanks out, flashes the speed limit, or disables the function and continues to flash a driver's speed.

VIOLATION ALERT FLASHING SPEED
Customize the digit flash rate when drivers meet or exceed user-defined speed thresholds.

DOWNLOAD THE MANUAL

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SpeedCheck® Manager

Device Programming and Scheduling Software

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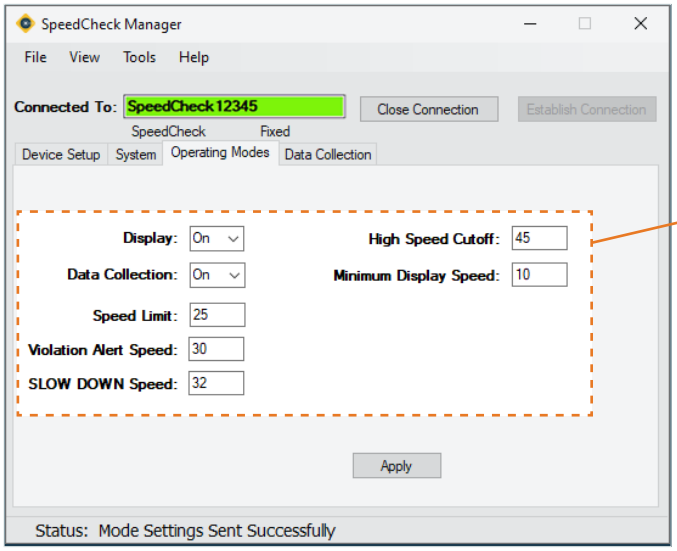
carmanah®

1 STANDARD OPERATION

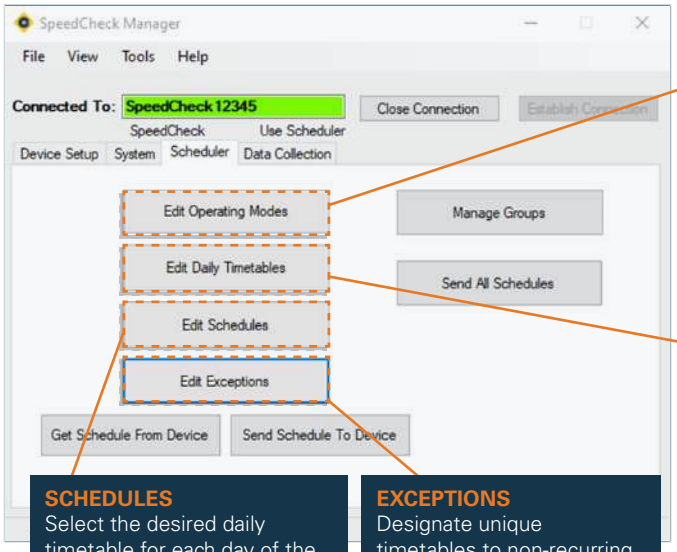
All settings for 24/7 operation or as a road speed data collector in stealth mode. Profiles are easily modified in the field and can be saved and assigned to all other signs on site.



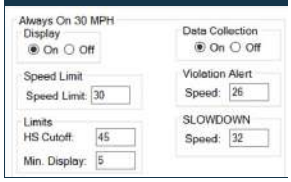
OPERATING MODES
Configure the display's speed parameters: set the road's speed limit, the speeds that trigger the digits to flash and display the optional "SLOW DOWN" message, and the minimum and maximum display speeds.

2 SCHEDULER OPERATION

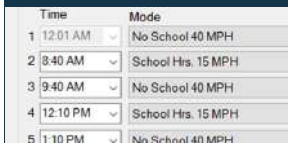
Program and manage calendar schedules for multiple SpeedCheck signs, including simple on/off functions, data collection times and operation of external devices like flashing beacons and cameras. Assign schedules to multiple signs.



OPERATING MODES
Program speed thresholds, display settings, and external outputs.

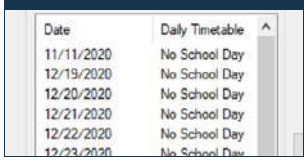


DAILY TIMETABLES
Create timetables by assigning user-generated operating modes to the desired time periods when they need to be in effect (up to 16 events per day).



SCHEDULES
Select the desired daily timetable for each day of the week.

EXCEPTIONS
Designate unique timetables to non-recurring event days—such as holidays or special events—up to two years in advance.



3 REMOTE OPERATION

See our StreetHub model and Glance™ software option.

4 iOS®/ANDROID™ MOBILE APP

Available for the SPEEDCHECK-12 model.

Document: SELL_TRA_SpeedCheck-Manager-Scheduler_RevA

SpeedCheck® Traffic Analyzer

Data Visualization and Reporting Software

SpeedCheck radar speed signs have built-in data collection capabilities. Users can connect to their SpeedCheck sign and download traffic data to their laptop via Bluetooth®. Traffic Analyzer software is included with every sign, allowing users to plot the data, see the success of their traffic calming programs and identify areas for improvement.

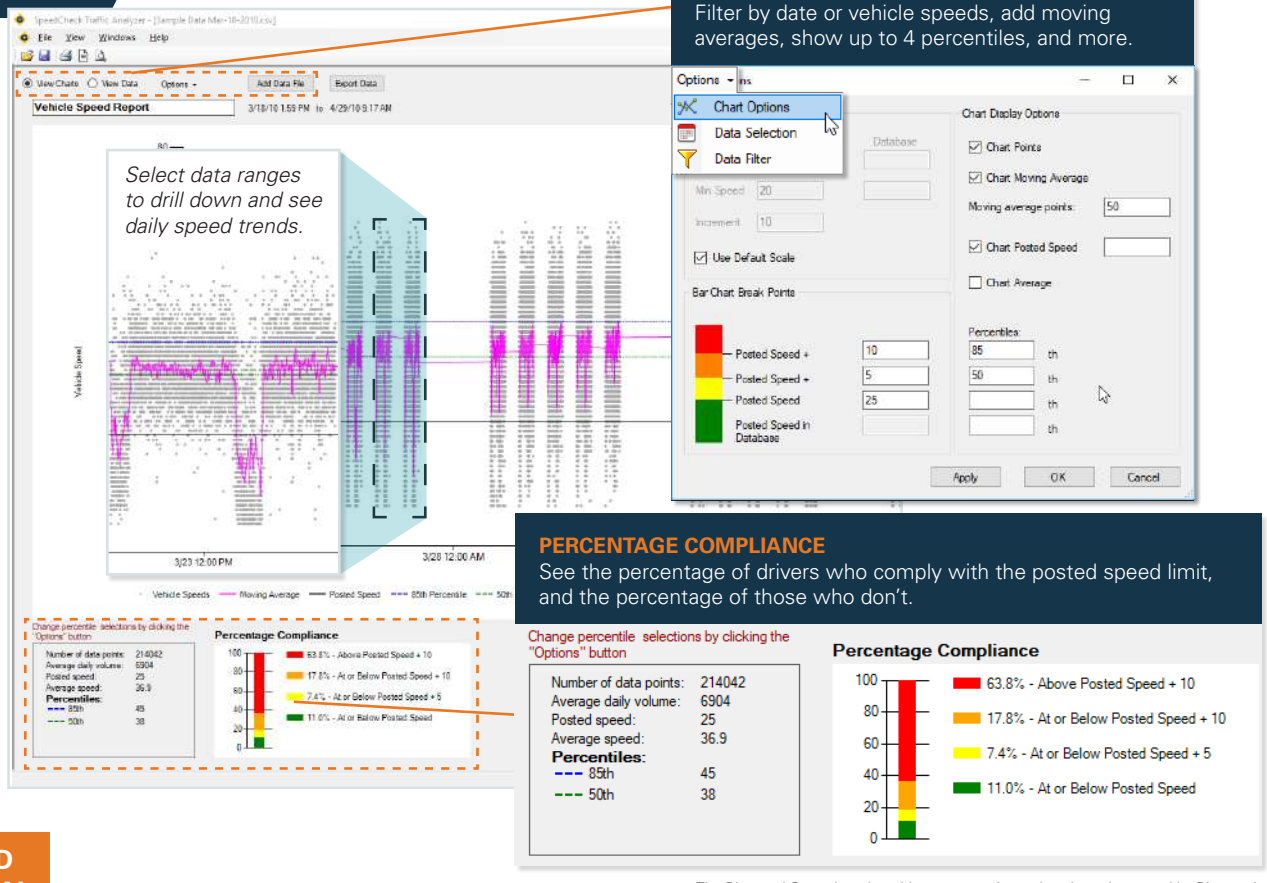
- Driver data collected includes date, time and speed
- Analyze vehicle speed data for over 200,000 vehicles with Excel-compatible reporting
- Customize various view and data settings, like showing posted speeds, moving averages, 85th percentile speeds, excluded days/hours, and more
- Easily identify problem areas and/or times of day for targeted police enforcement

INCLUDED WITH EVERY SPEEDCHECK SIGN	
Software and Mobile App	SpeedCheck Manager mobile app for quick changes to high-touch settings
	SpeedCheck Manager PC software for all setup and programming options, including calendar scheduling, data collection
	On-board data logger for collecting vehicle speed data, date and time
	Traffic Analyzer PC software for data visualization, analysis and reporting
Hardware and Installation Setup	USB Bluetooth dongle shipped with every order
	Radar installation kit with alignment tool

COMPATIBLE WITH
SPEEDCHECK-12/15/18
SPEEDCHECK-AS
SPEEDCHECK-VS

SYSTEM REQUIREMENTS
Windows 7** or 10 (32- or 64-bit) laptop/desktop computer ** A Bluetooth dongle may be required for laptops running Windows 7 and for desktop computers.

PC SOFTWARE: QUICK VIEW



OPTIONS
Configure how you want your data displayed. Filter by date or vehicle speeds, add moving averages, show up to 4 percentiles, and more.

PERCENTAGE COMPLIANCE
See the percentage of drivers who comply with the posted speed limit, and the percentage of those who don't.

DOWNLOAD THE MANUAL

Warning Beacons & 24-Hour Flashers

Flashing Beacons & LED Enhanced Signs

Help drivers focus on signs

Every street, road, and highway presents a unique set of challenges to traffic engineers looking to improve safety, increase walkability. When an intersection, blind corner, or other location is problematic, adding LED flashing beacons or lighted sign systems that flash 24-hours a day draw attention to school zones, highlight yield requirements at crosswalks, and reduce stop sign blow-throughs. Our beacons and signs are compliant with the Manual on Uniform Traffic Control Devices (MUTCD) and install quickly on all sign types.

Adding 24-hour flashing beacons to stop signs can more than **DOUBLE THE STOP RATE** at unsignalized intersections.

Configure a 24-hour flashing sign

Build a LED enhanced sign

Stop signs, including 4-way, 2-way, or T-intersections, and approaches to these intersections

Yield signs, including at approaches to intersections or roundabouts, or at highway on-ramps or off-ramps

Curve Ahead signs or other indicators of sharp turns or blind corners

Wrong Way signs on access ramps or divided highways

R247 Series

24-Hour Flashing Beacon and Sign Comparison Chart

Solar engines compatible with:

Circular beacons

LED enhanced signs

FEATURES	R247-E	R247-F	R247-G
Power options	DC	DC	DC or AC
Solar panel	15 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, Yellow, Green, Natural Aluminum
Interactive user interface	Yes	Yes	Yes
Battery options	14 Ah (2x 7 Ah)	18, 36 Ah	35, 75, 100 Ah
Maximum beacons	2	4	4
Signal housing colors	Black, Yellow, Green	Black, Yellow, Green	Black, Yellow, Green
MUTCD, ITE, and 1.7x ITE intensity	Yes	Yes	Yes
MUTCD and ITE-compliant chromaticity and output shape	Yes	Yes	Yes
MUTCD-compliant flash pattern	Yes	Yes	Yes
LED modules, yellow or red, 8" or 12"	Yes	Yes	Yes
LED embedded signs	Yes	Yes	Yes
Internal Carmanah calendar	Yes	Yes	Yes
Third-party time clock compatible	Yes, RTC	Yes, RTC or AI	Yes, RTC or AI
StreetHub remote connectivity option	No	Yes	Yes
Manual override switch	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

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R247-E

Solar-Powered 24-Hour Flashing Beacon Data Sheet

GO TO PRODUCT PAGE ON WEBSITE

24-hour flashing beacons for warning and stop signs increase compliance and reduce blow-throughs:

- Highest intensity output in the industry
- MUTCD and Buy America compliant
- Compact and lightweight solar engine
- Solar Power Report™ (SPR) prepared for every location to ensure battery longevity

Superior Design and Technology

The R247-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 R247-E to handle all warning and stop sign 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 signs in minutes, and new installations can be completed without the cost of larger poles, new bases, and trenching.

Advanced User Interface

The R247-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. Optional manual override switch for local control.

Reliable

Every solar-powered model is solar-sized by location to ensure year-after-year operation. Carmanah includes a Solar Power Report to prove sustainability over a 12-month period.

MUTCD compliant

Buy America compliant

5-year limited warranty

Solar-sized for every location

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R247-E

Solar-Powered 24-Hour Flashing Beacon Data Sheet

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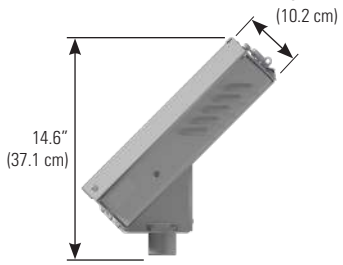
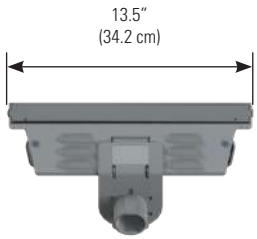
SOLAR ENGINE DIMENSIONS

Side View



Bottom View



SOLAR ENGINE MOUNTING

2.0"- 2.5" Perforated Square Pole Mount

2.38" - 2.88" Diameter Round Pole Mount

3.5" - 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 beacon mounting options are available. Contact Carmanah for more information.

BEACON SPECIFICATIONS

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 or red
	High-power LEDs: +90% lumen maintenance (L90) based on IES LM-80
	Yellow, black, or green signal heads in UV-resistant polycarbonate or aluminum

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, dusk-to-dawn operation
	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 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
Beacon Communication	Optional encrypted, wireless radio with 2.4 GHz mesh technology
	Optional radio allows calendar program, manual override switch, or input device from one system to remotely control other systems
	User-selectable multiple channels to group different beacons and ensure a robust wireless signal
	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	Standard operation is flashing 24 hrs./day
	Optional internal time clock for calendar programming
	Optional manual override switch allows local control of beacons
	Optional junction box: lockable, hinged door, corrosion-resistant aluminum enclosure allows easy calendar programming and access to manual override switch
Warranty	**5-year limited warranty, 1-year limited on batteries**

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.

Document: DATA_TRA_R247-E_RevL

R247-F

Solar-Powered 24-Hour Flashing Beacon Data Sheet

GO TO PRODUCT PAGE ON WEBSITE

24-hour flashing beacons for warning and stop signs increase compliance and reduce blow-throughs:

- Highest intensity output in the industry
- MUTCD and Buy America compliant
- Compact and lightweight solar engine
- Solar Power Report™ (SPR) prepared for every location to ensure battery longevity

Superior Design and Technology

The R247-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 R247-F to work with remote monitoring and operate at higher intensities 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 signs in minutes, and new installations can be completed without the cost of larger poles, new bases, and trenching.

Advanced User Interface

The R247-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. Optional manual override switch for local control.

Reliable

Every solar-powered model is solar-sized by location to ensure year-after-year operation. Carmanah includes a Solar Power Report to prove sustainability over a 12-month period.

MUTCD compliant

Buy America compliant

5-year limited warranty

Solar-sized for every location

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R247-F

Solar-Powered 24-Hour Flashing Beacon Data Sheet

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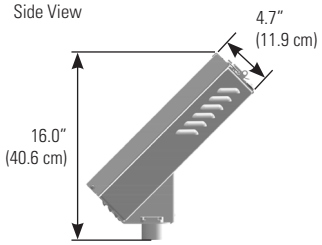
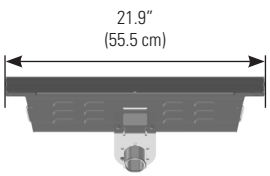
SOLAR ENGINE DIMENSIONS

Side View



Bottom View



SOLAR ENGINE MOUNTING

2.0"- 2.5" Perforated Square Pole Mount

2.38" - 2.88" Diameter Round Pole Mount

3.5" - 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 beacon mounting options are available. Contact Carmanah for more information.

BEACON SPECIFICATIONS

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 or red
	High-power LEDs: +90% lumen maintenance (L90) based on IES LM-80
	Yellow, black, or green signal heads in UV-resistant polycarbonate or aluminum

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, dusk-to-dawn operation
	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 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
Beacon Communication	Optional encrypted, wireless radio with 2.4 GHz mesh technology
	Optional radio allows calendar program, manual override switch, or input device from one system to remotely control other systems
	User-selectable multiple channels to group different beacons and ensure a robust wireless signal
	Instantaneous wireless activation: <150 ms
	Wireless range: 1000 ft (305 m)
	Integrated, vandal-resistant 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 36 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 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	Standard operation is flashing 24 hrs./day
	Optional internal time clock for calendar programming
	Optional manual override switch allows local control of beacons
	Optional junction box: lockable, hinged door, corrosion-resistant aluminum enclosure allows easy calendar programming and access to manual override switch
Warranty	**5-year limited warranty, 1-year limited on batteries**

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

Document: DATA_TRA_R247-F_RevC

R247-G

Cabinet-Based 24-Hour Flashing Beacon Data Sheet

GO TO PRODUCT PAGE ON WEBSITE

24-hour flashing beacons for warning and stop signs increase compliance and reduce blow-throughs:

- Highest intensity output in the industry
- MUTCD and Buy America compliant
- Solar or AC-powered
- Solar Power Report™ (SPR) prepared for every location to ensure battery longevity

Superior Design and Technology

The R247-G is a cabinet-based system with a separate, high-power solar panel. This design enables the R247-G to work with remote monitoring and operate at higher intensities in challenging environments. MUTCD flash patterns, available ITE intensity, and multiple configurations enable the R247-G to handle all warning and stop sign applications.

Easy Installation

All components, including the battery or AC power supply and Energy Management System (EMS) 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 R247-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. Optional manual override switch for local control.

Reliable

Every solar-powered model is solar-sized by location to ensure year-after-year operation. Carmanah includes a Solar Power Report to prove sustainability over a 12-month period.

MUTCD compliant

Buy America compliant

5-year limited warranty

Solar-sized for every location

1.844.412.8395 | traffic@carmanah.com

R247-G

Cabinet-Based 24-Hour Flashing Beacon Data Sheet

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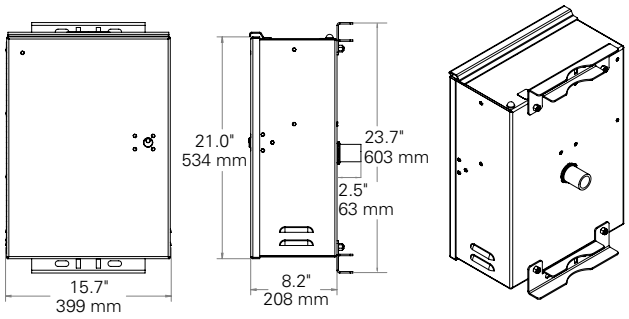
CABINET DIMENSIONS



SOLAR PANELS AND MOUNTS

3.5" - 4.5" Diameter Round Top of Pole Mount

Side of Pole Mount

PANEL*	LENGTH	WIDTH
20 W**	18.5" (470 mm)	13.6" (345 mm)
50 W	26.3" (668 mm)	21.2" (538 mm)
80 W	30.7" (780 mm)	26.5" (672 mm)

* Carmanah will conduct a site assessment and provide an Solar Power Report™ to determine the correct solar panel and battery size.

** Only available in a Side of Pole configuration.

BEACON MOUNTING

Dual Beacon

Quad Beacon

BEACON SPECIFICATIONS

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 or red
	High-power LEDs: +90% lumen maintenance (L90) based on IES LM-80
	Yellow, black, or green signal heads in UV-resistant polycarbonate or aluminum

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, dusk-to-dawn operation
	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
Beacon Communication	Optional encrypted, wireless radio with 2.4 GHz mesh technology
	Optional radio allows calendar program, manual override switch, or input device from one system to remotely control other systems
	User-selectable multiple channels to group different beacons and ensure a robust wireless signal
	Instantaneous wireless activation: <150 ms
	Wireless range: 1000 ft (305 m)
	Integrated, vandal-proof antenna
Power System	Solar or AC-powered
	AC: 100-240 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: 35, 55, 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 Optional padlockable latch
	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	Standard operation is flashing 24 hrs./day
	Optional internal time clock for calendar programming
	Optional manual override switch allows local control of beacons
	Optional junction box: lockable, hinged door, corrosion-resistant aluminum enclosure allows easy calendar programming and access to manual override switch
Warranty	**5-year limited warranty, 1-year limited on batteries**

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

Document: DATA_TRA_R247-G_RevI

LED Enhanced Signs

Data Sheet

carmanah®

GO TO PRODUCT PAGE ON WEBSITE

LED flashing signs improve driver compliance at crosswalks, school zones, warning and stop signs:

- Brightest in the industry: more than 1,000,000 mcd daytime light intensity
- System is reliable, compact and lightweight
- Solar Power Report™ (SPR) prepared for every location to ensure battery longevity

High-Intensity Light Output

Our LED Enhanced Sign provides high-intensity light output that can improve driver response under all conditions, no matter the time of day or weather. We use the same quality LEDs found in our rectangular rapid flashing beacons, and each sign is powered by Carmanah's robust solar or AC engine. This sign includes nighttime dimming, multiple flash pattern and intensity settings and ambient auto adjust.

Easy Installation

Carmanah's LED Enhanced Signs are conveniently shipped pre-configured from the factory, and installation is quick and uncomplicated—dramatically reducing installation costs. Retrofitting can be done where existing sign bases are used to enhance these sites in minutes, and new installations can be completed without the cost of larger poles, new bases and trenching.

Solar Sizing for Reliable Performance

Carmanah's LED Enhanced Flashing Signs are the most reliable and brightest signs on the market because we're experts at sizing-up solar. Using your sign settings and environmental factors at your location site, Carmanah's solar modeling tool produces a Solar Power Report and recommended product model that will provide dependable, year-after-year operation.

Advanced LED Enhanced Sign Options

Our LED Enhanced Sign 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. An optional manual override switch or wireless connection for local or remote control are also available.

MUTCD COMPLIANT
MUTCD compliant

Buy America compliant

5 YEARS
5-year solar engine warranty

STOP 3 YEARS
3-year LED sign warranty

SOLAR POWER 12 REPORT
Solar-sized for every location

1.844.412.8395 | traffic@carmanah.com

LED Enhanced Signs

Data Sheet

1.844.412.8395 | traffic@carmanah.com | carmanah.com

SIGN TYPES

Regulatory Signs

R1-1

MUTCD Chapter 2B compliant, R1-1 layout
3M Diamond Grade DG3 retroreflective sheeting, 4092 red
8 red LEDs
24, 30, 36, and 48" sign sizes

Warning Signs

W11-2

MUTCD Chapter 2C compliant, W11-2 layout
3M Diamond Grade DG3 retroreflective sheeting, 4081 fluorescent yellow
8 yellow LEDs
24, 30, 36, and 48" sign sizes

School Signs

S1-1

MUTCD Chapter 7B compliant, S1-1 layout
3M Diamond Grade DG3 retroreflective sheeting, 4083 fluorescent yellow green
8 yellow LEDs
30, 36, and 48" sign sizes

W1-2
Yellow

S5-1
White/Yellow

R1-2
Red

R5-1a
Red

*Many sign shapes, sizes and configurations are available. Contact Carmanah for more information.

SOLAR ENGINE MOUNTING

2.0"- 2.5" Perforated Square Pole Mount

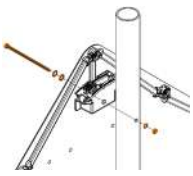
2.38" - 2.88" Diameter Round Pole Mount

3.5" - 4.5" Diameter Round Pole Mount

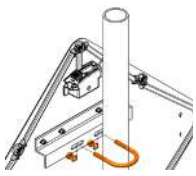
Side Pole Mount

LED SIGN MOUNTING

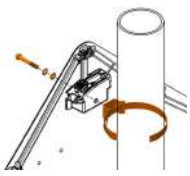
Through Bolt



U Bolt



Banding to Pole



ACTIVATION OPTIONS

Activation	Standard operation is flashing 24 hrs./day
	Optional internal time clock for calendar programming
	Optional manual override switch allows local control of beacons
	Optional junction box: lockable, hinged door, corrosion-resistant aluminum enclosure allows easy calendar programming and access to manual override switch
	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

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, dusk-to-dawn operation
	Flash duration: 5 sec. to 1 hr.
	Intensity setting: 20 to 1400 mA for multiple 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 LED enhanced signs
	Calendar: internal time clock function
	Radio settings: enable/disable, selectable channel from 1 to 14
	Output: enabled when flashing daytime and nighttime, or nighttime only
	Activation counts and data reporting via OBUI or optional USB connection
Optical	Light intensity: 1,000,000 mcd minimum daytime
	Viewing angle: 15°
	LEDs meet MUTCD optical requirements for color, flash rate and dimming
Sign Construction	MUTCD compliant: 2009 MUTCD, Chapter 2A, 2B, 2C, and 7B Signs
	High-power LEDs in waterproof housings
	UV-resistant polycarbonate channels protect wiring; includes fully integrated junction box
	0.08-0.10" aluminum sign face with stainless steel hardware
Connectivity	Optional encrypted, wireless radio with 2.4 GHz mesh technology
	Optional radio allows calendar program, manual override switch, or input device from one system to remotely control other systems
	User-selectable multiple channels to group different signs and ensure a robust wireless signal
	Instantaneous wireless activation: <150 ms
	Wireless range: 1000 ft (305 m)
	Integrated, vandal-proof antenna
Power System	Solar or AC-powered
	AC: 100-240 VAC input, 6-14 AWG Replaceable AC-DC power supply, circuit breaker, terminal block wiring
Energy Collection	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	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 enclosure for access to on-board user interface and batteries Optional padlockable latch
	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 140° F (-40 to 60° C) battery operating temperature
Warranty	**5-year limited on solar engine, 3-year limited on LED signs, 1-year limited on batteries**

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

Document: DATA_TRA_LED-enhanced-signs_RevC

Wrong-Way Driver Systems

Increase self-correction and speed up response times

Carmanah's Wrong-Way Vehicle Detection and Alert Systems offer a complete, configurable, and effective defense against wrong-way driving. Typically installed at or near freeway exit ramps—the primary origin of wrong-way events—these robust and durable systems use advanced radar, camera and analytics, and LED technology to accurately detect wrong-way vehicles, warn drivers of their mistake, encourage self-correction, and notify local authorities. Two categories of systems are available to suit a variety of roadway types and requirements.

Vehicle detection and alert systems are up to
80% EFFECTIVE
in stopping wrong-way drivers.

Configure a wrong-way driver system

WW100

Wrong-Way 24-Hour Flashing Warning Sign Data Sheet

GO TO PRODUCT PAGE ON WEBSITE

High-intensity, 24-hour flashing signs increase safety by focusing wrong-way driver attention on problematic highway off-ramps.

- Cost-effective driver warning solution
- Highest intensity output in the industry
- Buy America compliant
- Solar Power Report™ (SPR) prepared for every location to ensure battery longevity
- Self-contained design to simplify installation

WW100 with red LED light bars

WW100 with LED enhanced wrong way sign

Superior Alert Technology

The WW100 flashes 24 hours a day on exit ramps and other areas to deter potential wrong-way entry. Additionally, multiple signs can be installed along the ramp to help get driver attention before they enter the main roadway. Each sign can be outfitted with high-intensity, rapid-flashing light bars or an LED enhanced sign.

Easy Installation

The WW100 includes a compact enclosure containing the batteries, solar panel, and energy management system. This self-contained engine speeds up installation, dramatically reducing installation costs. Existing wrong way sign posts can be retrofitted in minutes and new installations can be completed quickly and easily without trenching.

Advanced User Interface

The WW100 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 more.

Long-term Solar Reliability

The WW100's solar engine is sized for your project location using Carmanah's proven solar software simulation. A comprehensive site assessment and report ensures each WW100 system will operate reliably over the long term.

MUTCD compliant

Buy America compliant

3-year limited warranty

Solar-sized for every location

1.844.412.8395 | traffic@carmanah.com

WW100

Wrong-Way 24-Hour Flashing Warning Sign Data Sheet

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FLASHING BEACON ENGINES

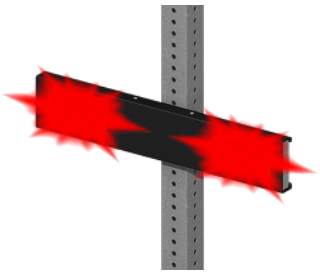
Compact, 15w integrated solar engine

Large, 30w integrated solar engine

Cabinet-based, 20w, 50w, and 80w solar and AC systems

WARNING LIGHT OPTIONS

Light Bar(s)



LED Enhanced Sign

SOLAR ENGINE MOUNTING

2.0"- 2.5" Perforated Square Pole Mount

2.38" - 2.88" Diameter Round Pole Mount

3.5" - 4.5" Diameter Round Pole Mount

Side Pole Mount

LED ENHANCED WRONG WAY SIGN

R5-1a

MUTCD Chapter 2B compliant, R5-1a layout
3M Diamond Grade DG3 retroreflective sheeting, 4092 red
8 red LEDs
36 and 42" sign sizes

SYSTEM SPECIFICATIONS

On-Board User Interface	Adjustable system settings with auto-scrolling LED display on our latest EMS
	System test, status, and fault detection: battery, solar, beacon, 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
	Intensity setting: 20 to 1400 mA for multiple light bars 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
Energy Collection	Solar or AC-powered
	45-degree solar panel 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	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 enclosure for access to on-board user interface and batteries
	Corrosion-resistant aluminum with stainless steel hardware
	Raw aluminum finish or powder coated in yellow or black
	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 140° F (-40 to 60° C) battery operating temperature
Warranty	**3-year limited warranty (1-year battery warranty)**

WARNING LIGHT SPECIFICATIONS

Light Bar	Purpose-built light bar optics = maximum efficiency and no stray light Exceeds SAE J595 class 1 intensity when used as recommended Meets SAE J578 chromaticity
	3 in (76 mm) x 7 in (178 mm) clear, UV-rated polycarbonate lens with red LEDs
	High-power LEDs: +90% lumen maintenance (L90) based on IES LM-80
	Independent, stainless steel mounting brackets make back-to-back installation simple and enable in-field aiming for maximum effectiveness
LED Enhanced Sign	MUTCD compliant: 2009 MUTCD, Chapter 2B Signs
	High-power LEDs in waterproof housings
	Aluminum channels protect wiring; includes junction box

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

Document: DATA_TRA_WW100_RevB

WW400

Vehicle Detection, Warning and Alert System Data Sheet

carmanah®

GO TO PRODUCT PAGE ON WEBSITE

An intelligent system that increases safety by warning wrong-way drivers and alerting traffic management centers (TMC):

- **Configurable roadway detection zones** include multi-lane, shoulder and progressive detection
- **Dual technology confirmation** using radar and high-definition cameras to dramatically reduce false alerts
- **On-board analytics** ensure maximum accuracy and instant event confirmation
- **Customizable** alert connectivity and event data package

Wrong-way vehicle detection systems are up to **80% effective in stopping wrong-way drivers*.**

WW400D
Detector Unit

WW400S
Warning Sign Unit

Superior Detection and Alert Technology

The system monitors highway ramps in both directions 24 hours a day without interfering with other traffic detection systems.

Dual technology confirmation utilizes two types of detectors—a single radar unit and two high-definition cameras—to ensure the accuracy of a wrong-way event. When the radar unit detects a wrong-way vehicle, the system simultaneously triggers the LED warning lights and activates the cameras and video analytics.

The system uses advanced image-processing algorithms to process the video and sends an alert when the wrong-way event is confirmed.

This intelligent system provides a higher level of accuracy during the day, night and all weather conditions.

Alert Notification

With a confirmed alert, the W400 also compiles an event package containing a configurable sequence of images and other data. The data is then transmitted to the TMC.

Configurable Setup and Monitoring

Users can configure the size, placement, and sensitivity of the detection zones. Cellular and Ethernet connectivity options can be used for programming and monitoring and an included application programming interface (API) allows system integration with traffic management software.

MUTCD COMPLIANT

MUTCD compliant

Buy America compliant

3 YEARS

3-year limited warranty

SOLAR POWER 12 REPORT

Solar-sized for every location

Nevada DOT, Wrong Way Driver System, preliminary research press release.

1.844.412.8395 | traffic@carmanah.com

WW400

Vehicle Detection, Warning and Alert System Data Sheet

1.844.412.8395 | traffic@carmanah.com | carmanah.com

carmanah®

1 DETECT

Radar unit detects an incoming wrong-way vehicle.

2 WARN

Flashing warning lights activated.

3 CAPTURE & CONFIRM

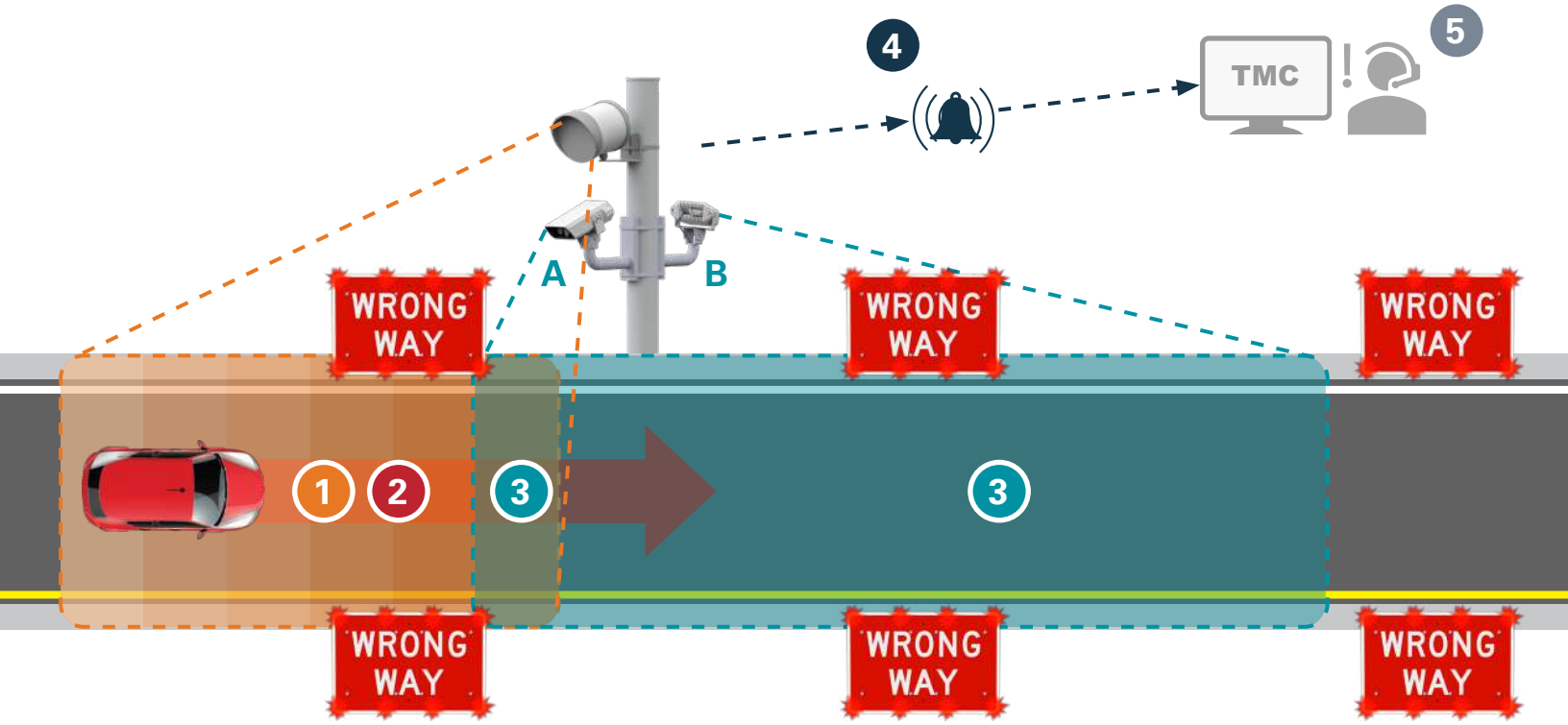
Video analytics confirm vehicle is traveling the wrong direction.

4 ALERT

Event package sent and alerts triggered.

5 REVIEW

Human reviews event and responds.

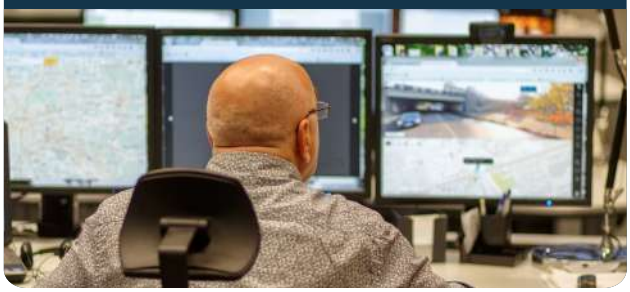


Configurable Setup

The WW400 supports setup and configuration of detection zones. Users can configure detection zone size, placement, and sensitivity.

Alerts and Monitoring

The WW400 sends an alert comprised of a configurable sequence of IR and color images and other associated data. Users can also remotely monitor system performance and wrong-way event data such as frequency, time periods, and more.



WW400D Detector Unit

Vehicle Detection, Warning and Alert System Data Sheet

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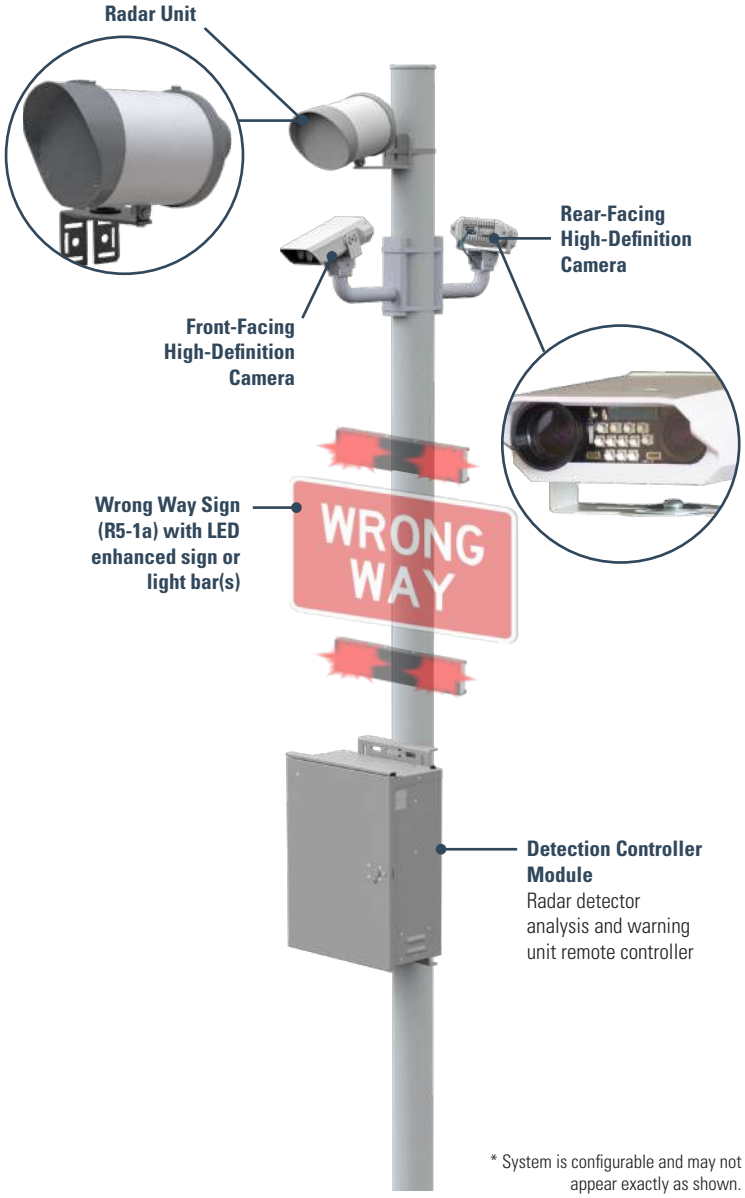

* System is configurable and may not appear exactly as shown.

WW400D DETECTOR SPECIFICATIONS	
Detection	24 GHz radar unit detects wrong-way vehicle High-definition cameras use on-board analytics to confirm radar unit reading
	Radar and cameras monitor all ramp lanes including shoulders
	Radar and infrared camera technology for accurate detection at night and in adverse weather conditions
	Meets NEMA TS2-2016, 6.5.2.17 requirements for vehicle presence detection system performance
	Multiple, progressive radar detection zones
	600 ft (183 m) effective range
Notifications	Dual technology confirmation dramatically reduces false-positive alerts
	Sends a notification evidence package containing a sequence of images and an .xml file with other event data
	User-configurable time segments before and after wrong-way driver event Example configuration: 10 seconds before and after wrong-way event
	Included API for integration into existing traffic management software
Connectivity	Supports local and remote programming
	Dry contact closure and on-board radio triggers warning unit lights to flash
	Controls multiple warning sign units
Detection Controller	Quad-core ARM processor Linux operating system Non-volatile memory storage
	Restarts autonomously after power interruption
	4 Ethernet ports, 1000 baseT 2 X 802.3af PoE ports, 1 X 24 V (non-standard)
Power Draw	1.55 A @ 24 VDC power use < 40 W
Power System	Solar or AC-powered
Cabinet Construction	Weatherproof, gasketed enclosure with vents for ambient air transfer (NEMA 3R)
	Lockable, hinged door with #2 lock Optional padlockable latch
	Corrosion-resistant aluminum with stainless steel hardware
	Prewired to minimize installation time
Environmental	-40 to 140° F (-40 to 60° C) system and battery operating temperature
Warranty	**3-year limited warranty**

HIGH-DEFINITION CAMERA SPECIFICATIONS	
Video Capture	1.0 GHz quad-core ARM processor
	1920x1080 video resolution 30 frames per second (FPS) H.264 video compression
	Color and infrared-based cameras and sensors Near-infrared illuminator LEDs allow for nighttime recording without an external illuminator
Dimensions	8.3" L x 4.8" W x 2.0" H (211 mm x 121 mm x 51 mm)

RADAR SPECIFICATIONS	
Radar	7 selectable frequency channels at 24 - 24.25 GHz
	Beam angle: Azimuth ±15 degrees out to 600 ft
	Operates with FSK-4 mode
	FCC 15.107 and 15.109 Class A radiated and conducted emissions compliance FCC part 15 low-power radar device
Dimensions	10.5" L x 8.5" W x 7" H (267 mm x 216 mm x 178 mm)

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.

Document: DATA_TRA_WW400_RevB

WW400S Warning Sign Unit

Vehicle Detection, Warning and Alert System Data Sheet

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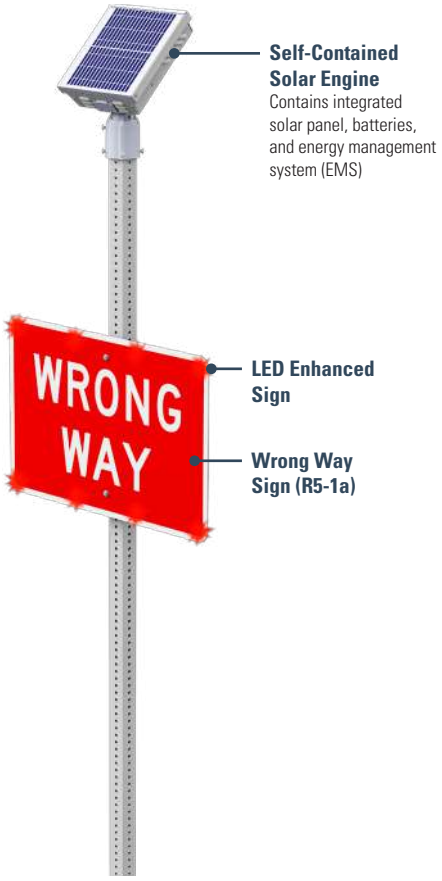
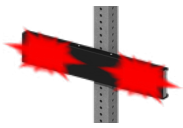


WARNING LIGHT OPTIONS

Light Bar(s)



LED Enhanced Sign

Circular Beacon

Light Bar	Purpose-built light bar optics = maximum efficiency and no stray light Exceeds SAE J595 class 1 intensity Meets SAE J578 chromaticity
	3 in (76 mm) x 7 in (178 mm) clear, UV-rated polycarbonate lens with red LEDs
	High-power LEDs: +90% lumen maintenance (L90) based on IES LM-80
	Independent, stainless steel mounting brackets make back-to-back installation simple and enable in-field aiming for maximum effectiveness
LED Enhanced Sign	MUTCD compliant: 2009 MUTCD, Chapter 2A, 2B, 2C, and 7B Signs
	High-power LEDs in waterproof housings
	Aluminum channels protect wiring; includes junction box
Circular Beacon	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, red
	High-power LEDs: +90% lumen maintenance (L90) based on IES LM-80
	Yellow, black, or green signal heads in UV-resistant polycarbonate or aluminum

SOLAR ENGINE MOUNTING

2.0"- 2.5" Perforated Square Pole Mount

2.38" - 2.88" Diameter Round Pole Mount

3.5" - 4.5" Diameter Round Pole Mount

Side Pole Mount

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.
	Radio settings: enable/disable, selectable channel from 1 to 14
	Output: enabled when flashing daytime and nighttime, or nighttime only
	Activation counts and data reporting via OBUI or optional USB connection
Connectivity	Encrypted, wireless radio with 2.4 GHz mesh technology
	User-selectable multiple channels to group different signs and ensure a robust wireless signal
	Instantaneous wireless activation: <150 ms
	Wireless range: 1000 ft (305 m)
	Integrated, vandal-proof antenna
Energy Collection	High-efficiency photovoltaic solar panel
	45-degree 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	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 enclosure 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
Environmental	-40 to 165° F (-40 to 74° C) system operating temperature
	-40 to 140° F (-40 to 60° C) battery operating temperature
Warranty	**3-year limited warranty**

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

Document: DATA_TRA_WW400_RevB

Why Carmanah?

Developing complete streets that everyone can use safely is a big job—but you don't have to do it alone. At Carmanah, we've got the tools to help you meet your community's needs. We use our 20+ years of solar and LED experience to develop flashing beacons and radar speed signs for crosswalks, school zones, and more.

Our solar and AC-powered products are available with industry-leading features, including wireless communication, calendar and remote monitoring functionality, or pedestrian and passive activation. Plus, we have the mounts and housings to fit any new or retrofit installation.

We manufacture long-lasting, low-maintenance systems that you can depend on.

- **Easy-to-install** for one worker in less than an hour
- **ITE Intensity** options meet MUTCD requirements.
- **Industry-leading warranty** guarantees worry-free operation.
- **Solar Power Report™** is our site assessment to ensure year-round solar reliability.

Learn more and get started at **carmanah.com**.

Represented in your region by: