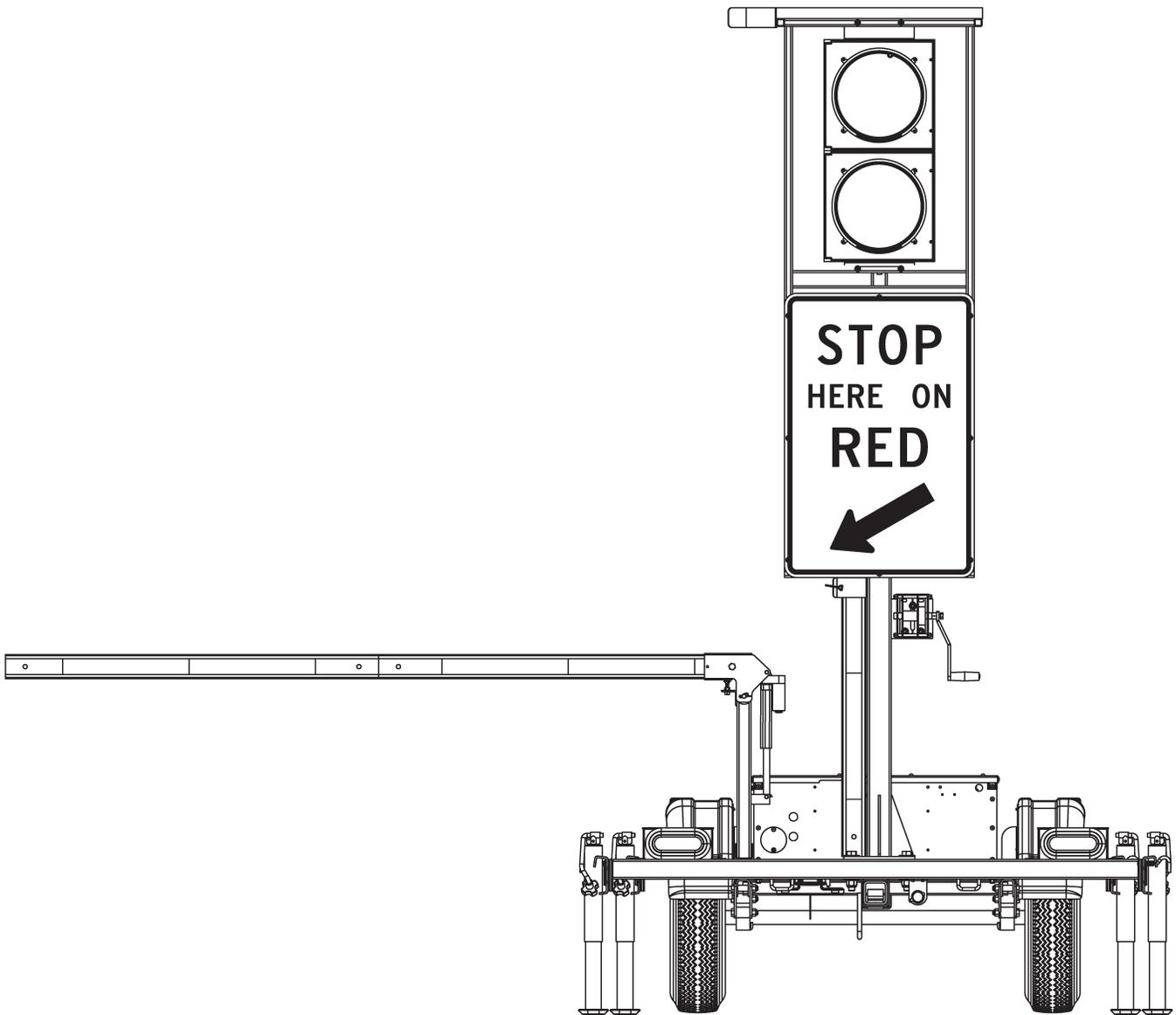


AUTOMATED FLAGGER ASSISTANCE DEVICE

MODEL WAFD
PRODUCT SPECIFICATIONS | MAY 2021



1. SYSTEM

- 1.1. Description The Wanco® Automated Flagger Assistance Device (AFAD) is a portable flagging station that enables a human flagger to remain off the road and out of the path of moving traffic, while the AFAD provides motorists with clear guidance through a temporary traffic control (TTC) zone.
- Principal components of the Wanco® AFAD are its mechanical gate arm, dual red and yellow signal lights, a regulatory “STOP HERE ON RED” sign, and a wireless controller. The gate arm blocks traffic when it is down, and allows traffic to pass when it is up. The signal lights change automatically in coordination with the gate arm position: a red light tells motorists to stop while the arm is down, and a yellow light flashes continually while the arm is up.
- The AFAD operator is in full control of the gate arm, manually triggering changes in gate arm position, and can operate either one or two AFADs with one controller. The controller offers several configuration options to suit the work zone and the operator’s needs.
- The Wanco AFAD is compact and portable, making it easy to tow and deploy. Two AFAD trailers can be towed together by a single vehicle.
- Power is provided by batteries, which are charged by an automated solar charging system. The remote control is continually charged by the AFAD power system when it is stored inside the lockable battery box.
- 1.2. Model WAFD Automated Flagger Assistance Device
- 1.3. Temperature limits Operating –4 to 158°F (–20 to 70°C)
Storage –22 to 176°F (–30 to 80°C)
- 1.4. Standards Compliant in accordance with MUTCD, December 2009

2. FEATURES

- 2.1. Setup
- Compact system is easy to transport and deploy
 - Tow one trailer or two trailers
 - Leveling jacks raise trailer tires off the ground to provide stability
 - Heavy-duty hand-winch allows one person to easily raise and lower the sign and lights
 - Single auto-locking device holds the tower in place while operating and during transport
 - Gate arm remains attached during transport and for storage
 - Gate arm extension can be removed and stowed
 - Easy sync with wireless controller
- 2.2. Operation
- Remote control allows human flagger to remain off the road
 - Wireless controller and cable-connected controller both included
 - Flexible operation allows any combination of one or two operators and AFADs
 - Large red and yellow signal lights are highly visible
 - Operator can enable haul-road crossing mode
 - Intrusion alarm activated from wireless controller

- 2.3. Wireless controller
 - Full-color touchscreen with high-resolution display
 - Intuitive easy-to-use interface
 - Large AFAD buttons continuously indicate gate position and signal light behavior
 - Prohibited operations are “grayed out” and inactive
 - When two AFADs are controlled by one operator, the main control screen prevents both AFAD gates from opening at the same time
 - Continuous display of wireless signal strength, power indicators, and system alerts
 - Large “All Stop” button closes any open gate
 - Individual vehicle-intrusion alarm buttons for each connected AFAD
- 2.4. Cabled controller
 - Single large button opens and closes gate
 - When cable is connected to control box, prevents wireless control
- 2.5. Power system
 - Battery powered and solar charging
 - Energy-efficient operation results in long run times
 - Solar panel charges batteries automatically without intervention
 - Charging system shuts down when batteries are fully charged, preventing damage
 - Power system allows battery charging with solar panel or commercial power
 - Cooling fan protects battery charger from overheating
 - Battery box includes cradle and charger for wireless controller
 - Battery box can be locked to prevent unauthorized access
- 2.6. Maintenance
 - Standard trailer tires
 - Bolt-on fenders can be replaced if damaged
 - Durable powder-coat finish resists the elements
- 2.7. Application

Common applications include:

 - Bridge maintenance
 - Pavement patching operations
 - Temporary traffic control zones
 - Roadwork zones
 - Partial road closures
 - Haul road crossings

3. GATE

3.1. Gate arm

3.1.1. Description Two-section tilting gate arm blocks passage of traffic in a single adjacent travel lane when tilted down in horizontal position

3.1.2. Tilt Gate arm attached to tilt bracket that moves the arm up and down between horizontal (blocking traffic lane) and vertical (allowing traffic flow)

Tilt bracket movement controlled by electric actuator attached to tilt bracket at the top and the trailer frame at the bottom

- 3.1.3. Construction Primary section attached to tilt bracket with one bolt; second section doubles gate arm length by attaching with a bracket and bolt to the free end of the primary section
- 3.1.4. Size Rectangular tubing, 3" x 2½" (7.6 x 5.4cm) H x D
- 3.1.5. Material Polyvinyl chloride (PVC), non-metallic
- 3.1.6. Conspicuity Highly reflective microprismatic conspicuity tape on both vertical sides of gate arm, with alternating vertical red and white stripes at 16-inch (40.6cm) intervals (3M™ 76308133108); tape runs along entire length of gate arm
3" (7.62cm) height
- 3.2. Actuator 12Vdc electric actuator, 5.9" (15cm) stroke at 67 lb max. load, rated for outdoor use (IP65)

4. REGULATORY SIGN

- 4.1. Description Standard R10-6 "STOP HERE ON RED" sign
- 4.2. Location Mounted to tower, rises up for improved visibility when deployed and lowers for transport and storage
- 4.3. Size 24" x 36" (61 x 91cm) W x H
- 4.4. Material Aluminum sheet, 0.080" (2mm) thick
White reflective coating (3M 3930-series high-intensity prismatic sheet, ASTM Type IV)

5. SIGNAL LIGHTS

- 5.1. Dual signal beacons
 - 5.1.1. Description Two LED beacon assemblies attached one above the other with colored lights
Red light on top beacon (Leotek® T12R-LX6-1A281)
Yellow light on bottom beacon (Leotek T12Y-LX6-1A281)
Hinged door provides access to interior, light, and wiring
Tunnel type visor extends 9.75" (248mm) from door surface
- 5.2. Location Mounted to tower, rises up for improved visibility when deployed and lowers for transport and storage
 - 5.2.1. Behavior
 - Gate open Flashing yellow signal
 - Gate open, 5-second countdown before closing Steady yellow signal
 - Gate closing Steady red signal
 - Gate closed Steady red signal
 - Gate opening Steady red signal

- 5.2.2. Housing 12-inch yellow polycarbonate beacon head (Mobotrex® SA101A1C11YYY00)
- 5.2.3. Flash rate 50 times per minute
50% duty cycle

6. SIREN/HORN

- 6.1. Description Alerts road workers when traffic has improperly entered the traffic control zone; siren sounds when the operator activates the intrusion alarm using the wireless controller
- 6.2. Sound 1-tone siren, 110 dB
- 6.3. Power 15W, 12Vdc
- 6.4. Rating Rated for outdoor use

7. CONTROL SYSTEM

- 7.1. Description Self-contained onboard control system manages signal light and gate arm functions
- 7.2. Control box
 - 7.2.1. Function Weatherproof control box contains system electronics, antenna for wireless control
 - 7.2.2. Size 11" x 14.9" x 5.11" (28 x 38 x 13cm) W x H x D
 - 7.2.3. Material Acrylonitrile butadiene styrene (ABS), gray
 - 7.2.4. Mounting Securely fastened to tower
 - 7.2.5. Door Front-panel is a door, hinged on the left, which opens fully
Two stainless steel latches hold door closed
Door can be locked with user-supplied padlock for added security
 - 7.2.6. Pair button Initiates pair mode to support linking wireless controller with onboard control system
Momentary switch located behind rubber boot on bottom of control box
- 7.3. Wiring All control system wiring routed inside liquid-tight loom, and attached with P-clamps riveted to trailer frame; no exposed wiring. Wiring service loop is designed to allow tower with signal lights to be raised and lowered.
- 7.4. Wireless controller
 - 7.4.1. Description Wireless touchscreen controller provides access to all control functions for one or two synched AFADs

7.4.2.	Touchscreen	Display	Full color, backlit, 4.3-inch display Resistive touch panel 480 x 272 pixels, W x H Display remains on continuously while in use and automatically powers down after 15 minutes of inactivity to conserve power
		Interface	Main screen provides gate arm control for paired AFADs, intrusion alarm control, battery charge and signal strength indicators, and access to settings and system information screens Settings screen provides access to pairing and other functions System information screen provides: <ul style="list-style-type: none">• Software and hardware version• Battery voltages controller and paired AFADs• Wireless signal strength for controller and paired AFADs• Alert indicators for each of the metrics above• FCC regulatory declaration See Exhibit A for sample screens and additional information
7.4.3.	Housing		Molded impact-resistant EPDM rubber, dark gray Flexible material tightly wraps around and holds together the controller and battery pack Ported for insertion of charging connector, removable for battery pack replacement Includes integral sunshade and holes for connecting neck strap
7.4.4.	Neck strap		Adjustable neck strap can be detached and replaced when needed Two double-hook “S” shape carabiners connect strap and controller housing
7.4.5.	Storage		Cradle located inside battery box, holds controller for storage, charging, and transport
7.4.6.	Power		8-cell, Li-Ion battery pack, lasts 60 hours on a single charge Typical charging time: 5 hours from fully depleted to fully charged using system charger 7.2V, 14Ah capacity
7.4.7.	Charging		12Vdc to 120Vac power inverter, 120Vac to 8.4Vdc system charger with power cord Power cord plugs into charging port on bottom of controller Located inside battery box
7.4.8.	Radio transceivers		XBee-PRO® S3B Point2Multipoint, 915MHz, 10Kbps 1000 ft (305m) range from controller to AFAD trailer
7.4.9.	Antenna	Controller	1/4-wave wire whip integrated antenna
		AFAD	Yagi RF antenna, 4-element, 896–980 MHz, 8 dBd

- 7.5. Cabled controller
 - 7.5.1. Description Cable-connected push-button controller provides control of gate arm on connected AFAD
While connected, prevents wireless connection
 - 7.5.2. Function Single push-button controls gate arm up/down motion
 - 7.5.3. Cable Hard-wired to controller; loose end fitted with twist-lock connector, attaches to nipple on bottom of control box

Length: 15 ft (4.6m)

8. TRAILER

- 8.1. Frame All welded structural steel
- 8.2. Tie-downs Two tie-downs: one centered on front of frame, one centered on rear of frame
- 8.3. Finish Oven-baked, safety-orange powder-coat finish to ensure durability and corrosion protection. Assemblies are bead-blasted and then run through a five-stage, high-pressure phosphate-wash prior to application of the finish coat.

See "Options and Optional Equipment" for color options.
- 8.4. Fenders Round, full wheel coverage, bolted to trailer frame, removable and replaceable
- 8.5. Axle assembly 1200 lb (544kg) capacity, 5 on 4.5" B.C. idler hub
- 8.6. Springs Double-eye leaf springs
- 8.7. Tires ST175/80D13 steel-belted trailer tires, load rating C
- 8.8. Drawbar
 - 8.8.1. Construction Telescopes inside receiver sleeve welded under trailer frame. Removable for shipping and for added theft protection if needed. Secures with two 1/2-inch (12mm) diameter bolts.
 - 8.8.2. Material Square tubing, 3" x 3/16" wall (7.62cm x 0.476cm wall)
 - 8.8.3. Jack Top-wind swivel, 2000 lb (907kg) capacity, steel footpad, 10" (25cm) total travel
 - 8.8.4. Tow hitch Standard 2-inch ball coupler tow-hitch, SAE Class 2, 3500 lb (1588kg) capacity. Bolts to drawbar, removable and replaceable.

See "Options and Optional Equipment" for tow-hitch options.
 - 8.8.5. Tow chains Two high-test proof coil chain assemblies with clevis slip hooks for towing. Chains attached to drawbar with quick connectors.

Material diameter 0.406" (10.3mm)

Working load limit 5400 lb (2450kg)

Breaking force 16,200 lb (72kN)

- 8.9. Stabilizer jacks Four swivel jacks, each with 2000 lb (907kg) capacity, mounted on corners of trailer frame
- 8.10. Wiring
- 8.10.1. Description Wiring to connect tow vehicle and trailer for trailer taillights is installed inside drawbar, with pigtails and connectors at both ends; no crimping required
- 8.10.2. Trailer plug A sealed, molded, 4-square connector plugs into harness under trailer
- 8.10.3. Tow-vehicle plug Two-piece assembly with 4-flat molded connector on harness plugs into tow vehicle
Meets SAE J1239
See “Options and Optional Equipment” for tow-vehicle plug options
- 8.10.4. Protection All trailer wiring encased in UV protective loom, and attached with P-clamp riveted to trailer frame; no exposed wires
- 8.11. Taillights Two oval-shaped, sealed, LED, combination stop, turn and taillights mounted to top of trailer deck behind fenders; each light held in place and sealed with snap-in rubber grommet
- 8.12. License plate Lighted license plate light holder is mounted under rear of trailer frame
- 8.13. Reflectors Sides of trailer have amber reflectors near front and red reflectors near rear
See “Options and Optional Equipment” for reflective tape
- 8.14. Tower assembly
- 8.14.1. Function Signal lights and regulatory sign are raised and lowered on a telescoping tower
- 8.14.2. Tower construction Two sections of square steel tubing with the inner section telescoping inside the outer section.
Nylon guide blocks keep the sections tight, eliminating the need for greasing the tower and preventing dirt from building up on the inner tower section. Dirt would cause performance problems and maintenance issues.
- 8.14.3. Finish Lower tower section and base are coated with oven-baked, safety-orange powder-coat finish to ensure durability and corrosion protection. Assemblies are run through a five-stage, high-pressure phosphate-wash prior to application of the finish coat.
Upper tower section is treated for corrosion resistance.
See “Options and Optional Equipment” for color options.
- 8.14.4. Winch assembly
- | | |
|----------|--|
| Function | Hand-operated winch raises and lowers sign cabinet |
| Capacity | 200 lb (91kg) |
| Brake | Safety friction-brake prevents display cabinet from falling if operator loses grip on winch handle |
| Cable | 3/16" (4.76mm) diameter galvanized aircraft cable |

8.14.5. Height lock Spring-loaded locking pin prevents tower from falling if the winch or cable were to fail

9. POWER SYSTEM

9.1. Description Electronics powered by batteries, which are charged automatically with integrated solar charging system

9.2. Battery box

9.2.1. Function Holds batteries and remote charger

See “Options and Optional Equipment” for heavy-duty secure battery box

9.2.2. Construction Riveted all-steel construction

All parts powder-coated before assembly

Divider panel inside box separates batteries from electronics

Louvers provide ventilation

Latches keep cover closed and can accept user-supplied padlocks

9.2.3. Location Centered between fenders, bolted to trailer frame

9.3. Batteries

9.3.1. Description Four deep-cycle golf-cart-type batteries, wired in parallel and series for a 12-volt system

See “Options and Optional Equipment” for battery options

9.3.2. Voltage 6Vdc each

9.3.3. Weight Approx. 60 lb (26kg) each

9.3.4. Capacity 416Ah total capacity @ 12Vdc

9.4. Remote charger

9.5. Function Plugs into a standard commercial power source to recharge batteries if battery voltage drops due to lack of sun for automated solar charging system

9.5.1. Type 12-volt battery charger

9.5.2. Location Inside battery box, mounted to divider panel on opposite side from batteries

9.5.3. Output capacity 15A

9.5.4. Output voltage 13.2Vdc range “float” mode

13.6Vdc range “absorption” mode

14.2Vdc range “bulk” mode

9.5.5. Input voltage 105 to 135Vac, standard three-prong plug

9.5.6. Input frequency 50 to 60 Hz

9.5.7.	Cooling	Automatic fan cooling
9.6.	Solar	
9.6.1.	Panels	One high-efficiency multi-crystal photovoltaic solar module
9.6.2.	Location	Top of tower. Solar panel array lies flat and rises with tower. No shadowing effect from any trailer component.
9.6.3.	Power output	85W See "Options and Optional Equipment" for solar power options
9.6.4.	Current	4.91A max. system current 5.47A open short-circuit current
9.6.5.	Voltage regulation	17.3Vdc max. 21.6Vdc open short-circuit voltage
9.6.6.	Regulation	Solar power input regulated by control system

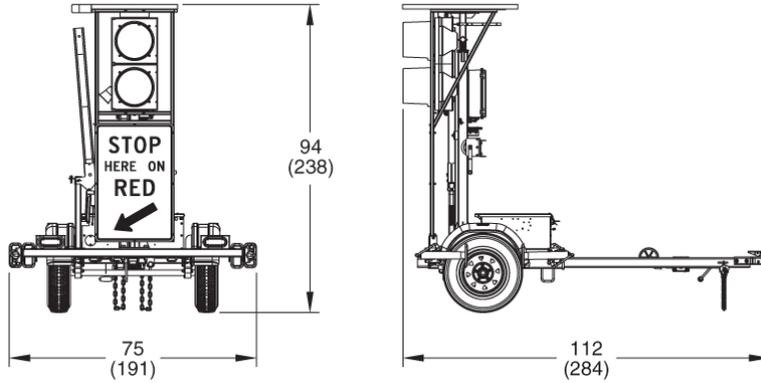
10. DIMENSIONS & WEIGHT

10.1. Dimensions

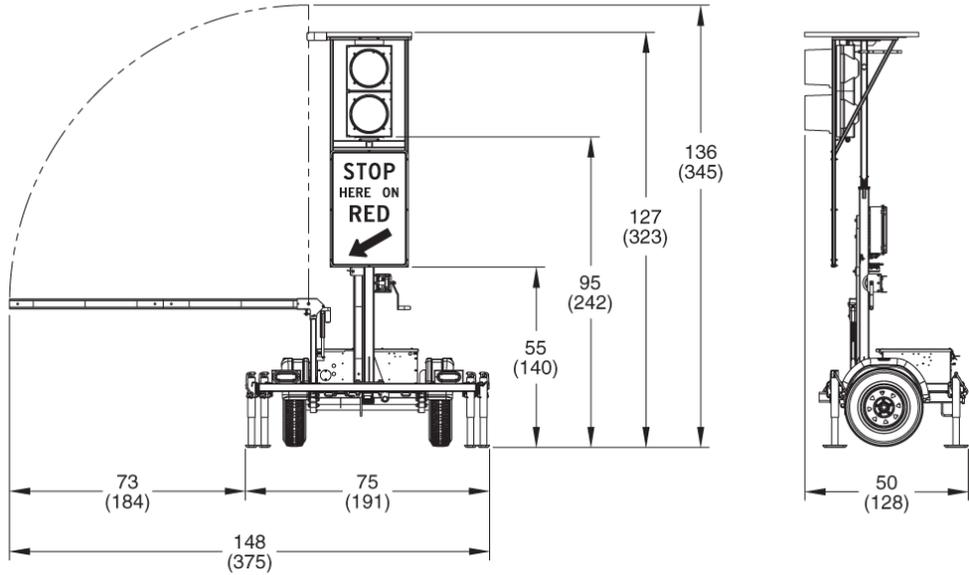
10.1.1. AFAD

*inches
(cm)*

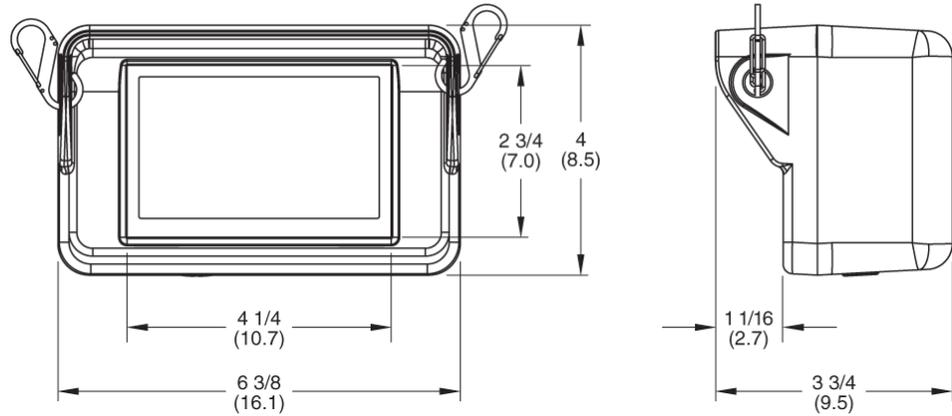
Travel position



Deployed



10.1.2. Wireless controller *inches
(cm)*



10.2. Weight

10.2.1. AFAD Approx. 875 lb (397kg)

10.2.2. Wireless controller Approx. 2 lb (1kg)

11. OPTIONS AND OPTIONAL EQUIPMENT

11.1. Lights

- 11.1.1. Signals backplate Black backplate provides a dark silhouette around signal lights, shielding them from background light and obstructions
- Options Silhouette/border width
Aluminum or ABS material
Reflective tape (must specify width and edge or center placement)
Louvers (must specify size or direction)
- 11.1.2. Indicator light Light installed behind signal lights indicate the current signal lights function, intended for when the operator's location prevents direct viewing of the signal lights

11.2. Gate arm

- 11.2.1. Short extension Additional gate arm extension lengthens arm by 2 feet (61cm)
- 11.2.2. Flag Flag attaches to end of gate arm and hangs from arm
24" (61cm) square, fluorescent orange vinyl

11.3. Towing

- 11.3.1. Tow hitch Combo-hitch for pintle hook and 2-inch ball hitch
Heavy-duty lunette ring, 2½" ID x 1½" cross-section
- 11.3.2. Tandem tow Rear-mounted trailer hitch for tandem towing two AFAD trailers with one tow vehicle using full-length drawbars on both trailers
- 11.3.3. Nestled dual-tow Short bar for towing two nestled AFAD trailers as though they were a single unit, without the articulation of drawbar tandem towing
- 11.3.4. Tow-vehicle plug Many types of plugs available, prewired at the factory; contact factory for details

11.4. Power

- 11.4.1. Additional batteries For geographic locations with less solar charging potential or colder weather, and for applications that require year-round charging, add batteries for greater capacity
- Option Two additional 6Vdc deep-cycle batteries, 208Ah additional capacity
- 11.4.2. AGM batteries Replace deep-cycle batteries with top-of-the-line absorbed glass mat (AGM) batteries
- Features 100% maintenance-free
Sealed and spill-proof
Faster recharge and greater freeze resistance than conventional batteries
Contains less lead than conventional batteries

	Options	Two 4D AGM 12Vdc batteries, 400Ah total capacity Three 4D AGM 12Vdc batteries, 600Ah total capacity
	Weight	Approx. 160 lb (72kg) each
11.4.3. Remote charger		When required for added battery charging capacity, replace standard remote charger with higher amperage charger
	Option	12-volt, 45-amp charger
	Details	Output voltage 13.4Vdc @ full load 13.6Vdc standard float voltage 14.2Vdc with dual-voltage jack installed
		Input voltage 108 to 132Vac, standard three-prong plug
		Input frequency 50 to 60 Hz
11.4.4. Solar		For geographic locations with less solar charging potential or colder weather, and for applications that require year-round charging, additional solar power is available
	Option	100W solar panel replaces standard solar panel
	Current	5.81A max. system current 6.39A open short-circuit current
	Voltage	17.2Vdc max. 21.6Vdc open short-circuit voltage
11.5. Trailer		
11.5.1. Secure battery box		High-security battery box features heavy-gauge steel lid, hidden hinges, and heavy-duty hidden-shackle padlocks. Replaces standard battery box.
11.5.2. Reflective tape		Reflective red-and-white conspicuity tape across rear trailer frame for increased visibility
11.5.3. Finish color		Specify power-coat color and, if applicable, color scheme

EXHIBIT A: WIRELESS CONTROLLER SCREENS

