PRODUCT SPECIFICATIONS

INSTALERT 48 CONTRACTOR-GRADE MESSAGE TRAILER

ALL TRAFFIC SOLUTIONS™

SYSTEM

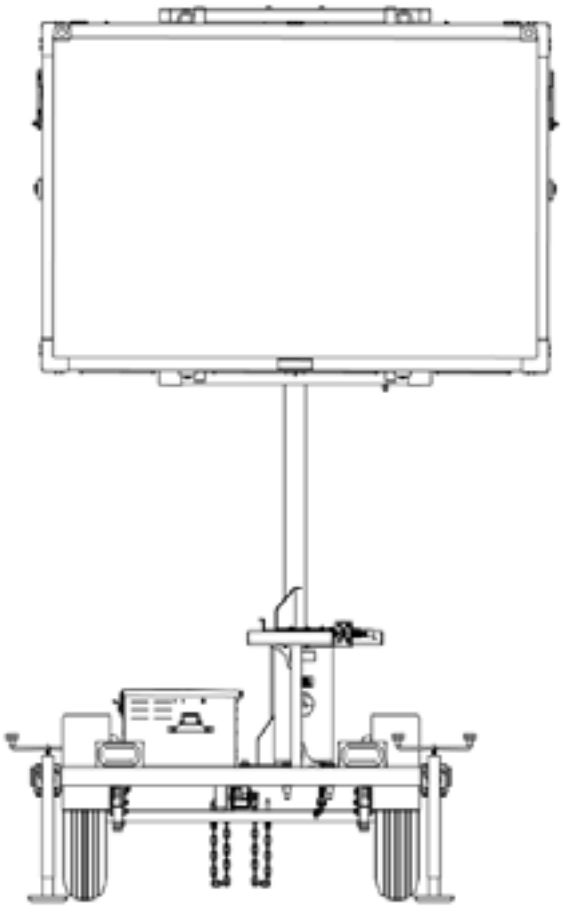
Description

Instalert 48 Contractor-grade message signs provide information to the public on a large, legible LED display. These signs are portable and self-powered, requiring no permanent installation or wiring. InstAlert 48 Contractor-Grade mini matrix signs are a compact version ATS' full-size variable message signs, about 30% smaller, making them highly maneuverable and easy to deploy.

The full-matrix display can present messages as text, graphics, or a combination of both. Messages are programmed using a self-contained onboard controller, making a laptop or external controller unnecessary. Signs come configured with preprogrammed standard messages, and users can create custom messages easily.

For optimal positioning, the sign rotates independent of the trailer and its height is fully adjustable. Jack-legs and optional outriggers provide more adjustability and added stability. The trailer is easy to maneuver and deploy, and can be towed by most vehicles.

Power is provided by batteries, which are charged by an automated solar charging system.



- **Models**
- **WVTM(A):** Mini matrix message sign with hydraulic lift
- **WVTM(B):** Mini matrix message sign with hand-operated winch
- **Temperature limits**
- Operating: –29 to 165°F (–34 to 74°C)
- Storage: –40 to 185°F (–40°C to 85°C)
- **Standards:** Compliant in accordance with:
- NTCIP Version 2
- NEMA TS 4-2005 Section 2 for ambient temperature, vibration, shock, electro-static discharge (ESD), and radio interference

FEATURES

- Setup
- Hydraulic lift or winch with cable raises sign display on tower
- Tower rotates 360 degrees for optimal positioning
- Single disk brake holds display in place during operation, while a cradle supports and holds display in travel position
- **Operation**
- Self-contained onboard control system, no laptop required
- Full-color touchscreen controller with high-resolution display
- Multi-level password protection restricts access to control software
- Preprogrammed text messages, symbols and graphics
- Easily center each line of text
- Internal clock facilitates built-in schedule programming
- Multiple alphanumeric fonts
- Control box can be locked to prevent unauthorized access
- Optical lenses and sunshades increase visibility and performance
- Cooling fans protect sign cabinet from overheating
- Optional outriggers widen footprint for added stability
- NTCIP compliant
- **Power System**
- Battery powered and solar charging
- Energy-efficient operation results in long run times
- Solar panels charge batteries automatically without intervention
- Charging system shuts down when batteries are fully charged, preventing damage
- Power system allows battery charging with solar panels or commercial power
- Cooling fan protects battery charger from overheating
- Battery box can be locked to prevent unauthorized access
- **Maintenance**
- Individual display modules can be replaced easily
- Standard trailer tires
- Heavy-duty bolt-on steel fenders can be replaced if damaged
- Durable powder-coat finish resists the elements
- Application: Common applications include:
- Roadwork zones
- Traffic calming
- Road closures
- Emergency response
- Public events

Display

- Cabinet
- **Description:** Weather-resistant cabinet contains display modules and related electronics. Hinged door with full-size display window protects electronics and provides access for maintenance. Clasps hold door closed during operation and can be locked with user-supplied padlock.
- Cabinet face is tapered five degrees downward (it is wider at the top than at the bottom) to face traffic, reducing glare.
- **Size:** 96” x 55” x 12” (244 x 140 x 30cm)
- **Material:** Aluminum sheet, 5052-H32, 0.062” (1.575mm) thick
- **Construction:** Panels are riveted together, with internal ribs to add lateral strength

- **Door**
- Cabinet door is aluminum extruded frame with sheet metal corner brackets. Stainless steel butt hinges are bolted to top of cabinet and door.
- Window is anti-glare Lexan® solar-grade polycarbonate, 0.150" (3.81mm) thick. Bulb-type weather seal ensures tight fit and seal between window and door frame.
- When sign is in stored position, door fully opens to service the sign cabinet interior. Telescoping prop-slides, one on each side of the cabinet, hold door open.
- Finish: Cabinet and door are coated with oven-baked, flat-black, powder-coat finish to ensure durability and corrosion protection. Assemblies are high-pressure phosphate-washed prior to finish coat.
- Wiring: Wiring service loop from control box to display cabinet is routed inside liquid-tight loom and P-clamped to trailer frame. Service loop length is designed to allow 360-degree sign rotation. All wiring connectors and procedures are per CSA standards.
- **Ventilation**
- Two cooling fans located at the top of the display cabinet circulate air into, through, and out of the cabinet to cool electrical components. A duct is located at the top of the cabinet to ensure even airflow.
- It is proven that electronic components, including LEDs, degrade in conditions of extreme heat. Without the cooling fans the display cabinet can reach over 200 degrees Fahrenheit.
- A temperature sensor is mounted on the photocell PC board inside the cabinet to control fan operation. Each fan has its own thermal settings, adjustable with the onboard computer, to optimize battery power usage.
- **Storage:** When lowered for storage and transport, the display cabinet rests in two support cradles, parallel to the trailer length, no locking pins required

Display matrix

- **Description: T**he display matrix is comprised of a series of display modules laid out in a grid across the inside of the display cabinet. Each module has a matrix of LEDs installed on its face, which light up to show a portion of the configured message. Each module features the necessary electronics and coatings to ensure outstanding performance and durability.

Display modules

- **Modular design:** Allows any display module to be installed in any position in the matrix without repositioning DIP switches
- **Wiring:** Modules have quick-connect electrical connectors for easy servicing. All wiring terminates at a single terminal strip inside the display cabinet.
- **Replacement:** Each module can be exchanged in less than two minutes. The only tool needed is a 5/16-inch nut driver socket or slotted screwdriver
- After a new module is installed, a one-step initialization process causes each module to sense its position in the full-matrix display. Initialization is accomplished using the sign's controller.
- **Size:** 14.2" (36.0cm) wide by 16.0" (40.6cm) high, nominal
- **Material:** FR4 glass-reinforced epoxy laminate, double-sided, black solder mask with white silkscreen
- **Board thickness:** 0.094" (2.388mm)
- **Copper size:** 1 oz. (28.4g)
- **Coating:** 5-mil, military-spec, low-VOC, silicone conformal coating (Dow Corning 1-2577) provides long-term protection against moisture and other atmospheric contaminants, resists corrosion and shorts due to high humidity
- **Vibration mounts:** All display modules are mounted on rubber vibration-isolation mounts, decreasing risk of physical shock during transport and isolating characters from chassis ground
- Humidity limits: Conformal coating rated to 95% relative humidity
- **Pixels**
- Four LEDs form a "pixel"
- **Pixel size:** 0.75" x 0.75" (19 x 19mm)
- **Full matrix:** 48 x 27 pixels (W x H), 1296 pixels total
- **Display module:** 8 x 9 pixels (W x H), 72 pixels total
- **Pixel pitch:** 47mm, horizontal and vertical

- LEDs
- **Technology**
- AlInGaP II (aluminum indium gallium phosphide) technology, T-1¾ size, through-hole auto-insertion
- **Color range:** Amber, 589.5 to 592 nm
- **Current:** 100 mA peak-pulsed forward current
- **Lenses and visors**
- Each pixel has a snap-in optical lens over the LEDs, enhancing the brightness and angularity of each pixel while reducing power consumption. A polycarbonate visor shades each row of pixels to eliminate glare caused by direct sun exposure. The sunshades snap onto the display module without tools. The lenses snap into the sunshades.
- These enhancements enable the message sign to operate with approximately half the power consumption of other message signs. As a result, the system is fully functional using fewer solar panels and batteries, while providing outstanding brightness and readability in all lighting conditions, and 30-day battery autonomy without sun. Reducing the number of solar panels and batteries also lowers the trailer weight and reduces maintenance costs.
- **Visibility:** 4800 ft. (1463m) per 2008 NTPEP results
- **Legibility:** Word recognition with default font, 611 to 702 ft. (186 to 214m) per 2008 NTPEP results
- **Viewing angle:** Total viewing area with optical lenses, 44.2 to 48.8 degrees per 2008 NTPEP results
- Brightness: Factory preset for optimal viewing and power consumption
- **Auto dimming:** Two photocells detect ambient light on the message sign; the message sign computer adjusts the brightness of the LEDs accordingly, dimming display brightness in darkness, increasing to full brightness in daylight
- Photocells are mounted inside the sign cabinet, one facing rear and one facing front
- **Software design**
- **Driver:** LEDs controlled through 30mA pulse-width modulation design
- **Addressing:** Each display module address is selected through a software command; no DIP switches are used. The address does not change until reprogrammed, preventing the message from shifting due to an individual module failure.
- **Pixel test:** Each module is equipped with individual pixel failure notification
- **Fonts**
- **12 fonts:** See Exhibit A for font samples and additional font information
- **Default size:** 5 x 7 pixels (W x H), 8.85" x 12.55" (225 x 319mm) 3 lines of 8 characters per line, maximum
- **Smallest size:** 4 x 5 pixels (W x H)
- **Largest size:** 11 x 23 pixels (W x H)
- **Other sizes:** See Exhibit A

CONTROL SYSTEM

- **Description:** Self-contained onboard computer, comprised of a power control unit (PCU), located behind display modules inside the message sign display cabinet; and a display control unit (DCU), located inside control box on the back of the message sign display cabinet.
- **Control box**
- **Size:** 12.3" x 11.7" x 5.3" (31.2 x 29.7 x 14.4 cm) W x H x D
- **Material:** 0.08" aluminum
- **Mounting:** Securely fastened to the sign cabinet with six mounting screws
- **Door:** Front-panel is a door, hinged on the left, which opens fully.
- **Latch:** Two quarter-turn latches on front of control box door keep hinged door closed. Both latches are keyed and can be locked.
- **Finish:** Cabinet and door are coated with oven-baked, equipment-white, powder-coat finish to ensure durability and corrosion protection. Assemblies are high-pressure phosphate-washed prior to finish coat.
- **Control panel: Touchscreen**
- **Display:** Full color, backlit, 7-inch display
- **Capacitive touch panel:** 800 x 480 pixels, W x H
- Display automatically shuts off after 10 minutes of inactivity
- **Interface**
- Menu-based structure, accessed with virtual buttons on the touchscreen display, provides access to all sign functions including programming messages

- Virtual keyboard appears when required for text entry
- Multi-level password protection restricts access
- **LED indicators**

Indicates the following status conditions:

- Solar charging system is charging batteries
- System power shutdown occurred
- Programmed schedule is active
- Power to optional radar device is on
- **Data port**
- 1 USB port for connecting optional handheld touchscreen controller and for downloading data from optional traffic data collector (if installed)
- See "Options and Optional Equipment"
- **PC boards**
- **Coating:** 100% coated with military-spec, low-VOC, silicone conformal coating to provide long-term protection against moisture and other atmospheric contaminants. Resists corrosion and shorts due to high humidity.
- **Humidity limits:** Conformal coating rated to 95% relative humidity
- **Serviceability:** Four plunger panel latches allow the control panel to be removed, providing access to internal components inside control box; PCU is accessible by removing display modules inside message sign display cabinet.
- All wiring connections have quick-connect plugs.
- **Controller software**
- **Standards:** Fully NTCIP-compliant
- **Security:** Three levels of password protection
- **Message programming:** Instant access to program new messages
- Extremely easy to program
- **Message types**
- **Quick-messages:** Easy quick-message activation
- Permanent, Over 90 preprogrammed permanent messages, including arrows and FHWA standards
- **Changeable:** 250 changeable messages stored in NV flash
- **Temporary:** 10 temporary or volatile messages, for ITS systems
- **Blank:** Easy sign blanking/power off
- **Interface display:** WYSIWYG (What You See Is What You Get) while programming
- **Text alignment**
- **Selectable:** left, center, or right; and top, middle, or bottom
- **Fonts**
- **Selectable:** see Exhibit A
- Blinking Each character can individually blink
- Individual lines of a multi-line message can blink
- The entire message can blink
- Adjustable timing and duty cycle
- **Message pages:** Maximum 10 sequential "pages" per message, sequencing speed from 0.1 to 25.5 sec.
- **Scheduling:** Real-time clock and calendar with DST control
- **Arrow board functions:** Sign can display any of the following 12 full-size arrow functions
- **Modes**
- Flashing left or right arrow
- Flashing double arrow
- Flashing four-corner warning
- Flashing caution-bar warning
- Sequencing left or right stem arrow
- Sequencing left or right walking arrow
- Sequencing left or right chevron arrows
- **Alternating diamonds:** (for samples, see Exhibit B)
- **Bold graphics:** Each arrow and bar is 5 pixels wide
- **One-click activation:** All modes can be activated using keyboard function keys
- **Configuration:** Menus provide access to all message sign configuration settings
- **Troubleshooting:** System status on main screen, detailed status and diagnostic menus provide additional message sign information to assist in troubleshooting
- **Trailer**
- **Frame:** All welded structural steel
- Fenders: Round full wheel coverage fenders with inner splash panel on each fender. Fenders are bolted to the trailer frame.
- **Material:** 16ga steel
- **Tie-downs:** One on each corner of frame
- **Finish:** Frame is 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

finish coat.
- See “Options and Optional Equipment” for color options.
- **Axle assembly:** 2000 lb. (907kg) capacity, 5 on 4.5” B.C. idler hub
- **Springs:** Double-eye leaf springs
- **Tires:** ST205/75D15 steel-belted trailer tires, load rating B
- **Drawbar**
- **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 diameter bolts.
- **Material:** Square tubing, 3” x 3/16” wall (7.62cm x 0.476cm wall)
- **Jack:** Top-wind swivel, 800-lb. (363kg) capacity with caster wheel to make moving trailer easier
- **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.
- **Tow chains:** Two high-test proof coil chain assemblies, with “latching” S-hooks for towing. Chains attached to drawbar with quick connectors.
- **Material diameter:** 0.406” (10.3mm)
- **Working load limit:** 5400 lbs. (2450kg)
- **Breaking force:** 16,200 lbs. (72kN)
- **Stabilizer jacks**
- Four swivel jacks, each with 2000-lb. (907kg) capacity, mounted on corners of trailer frame
- See “Options and Optional Equipment” for outriggers
- **Wind resistance**
- In the deployed position, the maximum sustainable wind speed before overturning, when supported by the standard jack stands with tires off the ground, is 72 mph (115km/h)
- **Taillights: Two oval-shaped, sealed, combination stop, turn and taillights**
- No screws used for mounting; bracket is welded to trailer frame; each light held in place and sealed with snap-in rubber grommet
- **License plate:** Lighted license plate light holder
- **Reflectors:** Sides of trailer have amber reflectors near front and red reflectors near rear
- See “Options and Optional Equipment” for reflective tape
- **Wiring**
- **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
- **Trailer plug:** A sealed, molded, 4-square connector plugs into harness under trailer
- 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
- **Protection:** All trailer wiring encased in UV protective loom, and attached with P-clamp riveted to trailer frame; no exposed wires
- **Tower assembly**
- **Function:** Sign cabinet is raised and lowered on a telescoping tower
- **Tower construction:** Two sections of square steel tubing with the inner section telescoping inside the outer section. The inner section is zinc plated to prevent corrosion.
- 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.
- **Swivel base**
- A steel tubular weldment is bolted to the trailer frame. The outer tower section rotates on a thrust bearing and washers inside the swivel base, reducing rotating friction.
- **Finish:** Tower sections and swivel base are treated for corrosion resistance
- **Height:** At fully deployed height, 84” (213cm) from ground to bottom of display cabinet
- **Height lock**
- **Winch model:** Spring-loaded locking pin prevents tower from falling if the winch or cable were to fail. Also locks tower when fully lowered into travel position.

- **Hydraulic lift model:** Locking pin inserted through the tower in the up position prevents the tower from falling if the hydraulics were to fail. Replaces spring-loaded locking pin.

Winch assembly (winch model only)

- **Function:** Hand-operated winch raises and lowers sign cabinet
- **Capacity:** 1500 lbs. (680kg)
- **Brake:** Safety friction-brake prevents display cabinet from falling if operator looses grip on winch handle
- **Cable:** 1/4" (6.35mm) diameter galvanized aircraft cable

Hydraulic lift (hydraulic model only)

- **Function:** Raises display cabinet with a hydraulic power unit that pressurizes a cylinder; lowered by controlled gravity return.
- Control switch for hydraulic lift is located on battery box. Switch cover accepts small padlock.
- **Hydraulic cylinder:** Single stage hydraulic, rated to 1500 psi, bottom end cap is keyed to prevent cylinder from rotating
- **Hydraulic power unit**
- **Type:** Electric motor driven
- See "Options and Optional Equipment" for hand pump
- **Voltage:** 12Vdc
- **Flow rate:** 1.5 gpm
- **Pressure rating:** Factory set to 950 psi
- **Mounting:** Installed vertically on bracket that is mounted to swivel base
- **Fluid:** AW-32 hydraulic oil
- **Tank capacity:** 1.2 gal. total, 0.766 gal. usable capacity
- **Cover:** Sheet metal cover protects power unit from vandalism and environmental contaminants. Security screws fasten cover to power unit.
- **Rotation:** Sign rotates by hand, pivoting 360 degrees on tower
- **Rotation lock:** Sign rotation is locked with an adjustable lever that operates a mechanical friction caliper and disk brake. The ½-inch thick, round, zinc-plated brake disk is bolted to the outer tower section.
- **Sight tube:** A sight tube for aiming the message sign in desired direction is mounted to tower mast

POWER SYSTEM

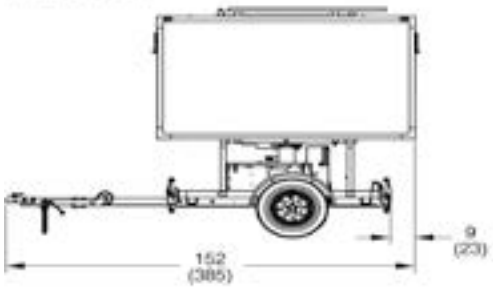
- **Description:** Electronics powered by batteries, which are charged automatically with integrated solar charging system
- **Battery box**
- **Function:** Holds batteries and remote charger
- See "Options and Optional Equipment" for heavy-duty secure battery box
- Construction: Riveted all-steel construction
- 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
- **Location:** Centered over axle on left side of trailer, bolted to trailer frame
- **Batteries**
- **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
- **Voltage:** 6Vdc each
- **Weight:** Approx. 60 lbs. (26kg) each
- **Capacity:** 430 Ah total capacity @ 12Vdc
- **Remote charger**
- **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
- **Type:** 12-volt battery charger
- **Location:** Inside battery box, mounted to divider panel on opposite side from batteries
- **Output capacity:** 15A
- **Output voltage**
- 13.2Vdc range "float" mode
- 13.6Vdc range "absorption" mode
- 14.2Vdc range "bulk" mode
- **Input voltage:** 105 to 135Vac, standard three-prong plug

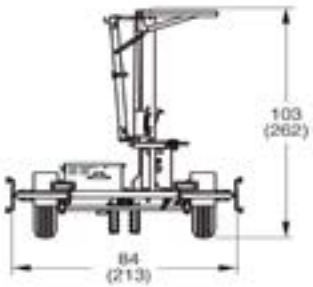
- **Input frequency:** 50 to 60 Hz
- **Cooling:** Fan cooled when charger temperature reaches 95°F (35°C)
- Protection: Automotive-style replaceable fuses
- **Solar**
- **Panels:** One high-efficiency multi-crystal photovoltaic solar module
- **Location:** Behind message sign, over tower. Solar panel array lies flat; rises and rotates with message sign. No shadowing effect on any trailer component.
- **Power output:** 85W
- See "Options and Optional Equipment" for solar options
- **Current:** 9.5A max. system current
- A open short-circuit current
- **Voltage:** 17.9Vdc max, 21.8Vdc open short-circuit voltage
- **Regulation:** Solar panels regulated by message sign control system
- **Security:** Solar panel array bolted to message sign frame with security screws and special security nut. Tool for security screws mounted inside battery box.

Dimensions & Weight

Dimensions in inches (cm)

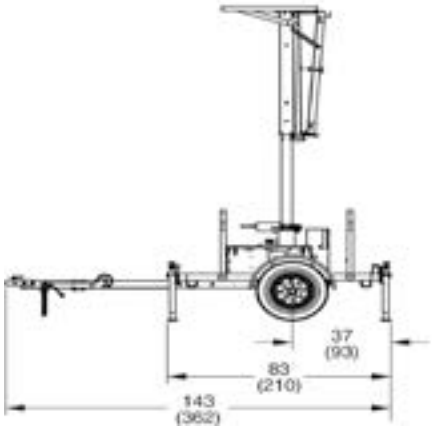
Travel Position

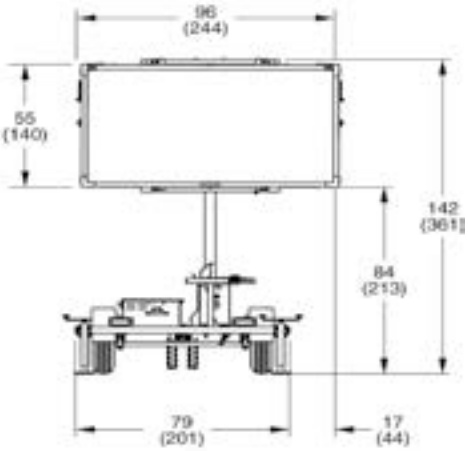




Weight	
Winch model	Approx. 1580 lbs. (717 kg)
Hydraulic model	Approx. 1800 lbs. (817 kg)

Deployed





OPTIONS AND OPTIONAL EQUIPMENT

- **Frame-mounted control system**
- Located inside a locking control box near front of trailer. A laptop with Wanco software can be connected if desired.
- Replaces in-cabinet controller.
- **Control box**
- **Rating:** NEMA 4 (IP53) type, dust and weatherproof steel box
- **Size:** 24.0" x 16.0" x 9.5" (61.0 x 40.6 x 24.1cm) W x H x D
- **Material:** 14ga CRS
- Door: Front-panel is a door, hinged at the bottom, which drops down when opened. A bracket inside the door holds the controller operation manual.
- **Latch:** Handle on front of control box door operates three-point latching mechanism to keep hinged door closed. Handle is keyed and can be locked.
- **Finish:** Cabinet and door are coated with oven-baked, equipment-white, powder-coat finish to ensure durability and corrosion protection. Assemblies are high-pressure phosphate-washed prior to finish coat.
- **Serviceability**
- Entire console box is removable for service; all wiring has quick-connect plugs
- Console light: A nightlight inside control box is controlled by magnetic reed switch on door, and illuminates the control panel and manual area for nighttime reading. Light shuts off automatically after a period of keyboard inactivity.
- **Control panel**
- Operation instructions: Easy-to-follow instructions are silkscreened on front of control panel for easy reference while using the controller. No stickers or decals, the silkscreen is durable and long-lasting.
- **Display:** A full-matrix, backlit LCD provides interactivity with the sign
- 160 pixels wide by 128 pixels high, 101 by 82mm viewing area
- **Adjustable brightness:** LCD automatically shuts off after a period of inactivity; pushbutton switch activates LCD
- **Interface:** Detachable standard desktop-computer keyboard, IBM compatible, 101 USB connection
- **LED indicators:** Indicates message sign status conditions. Depending on user-specified message sign options, may include one or more of the following:
  - Active alarms
  - Message sign power is on
  - Solar charging system is charging batteries
  - Programmed schedule is active
  - Radar power is on
  - Highway radio is on
  - Low battery voltage detected, system power shutdown occurred
  - Hydraulic lift switch
  - Control switch for hydraulic lift is located on control panel. Replaces switch on battery box (hydraulic model only).
- **Electronics**
- PCB coating
- 100% coated with military-spec, low-VOC, silicone conformal coating to provide long-term protection against moisture and other atmospheric contaminants. Resists corrosion and shorts due to high humidity.
- **Humidity limits:** Conformal coating rated to 95% relative humidity
- **Tow hitch:** Combo-hitch for pintle hook and 2-inch ball hitch, heavy-duty lunette ring, 2½" ID x 1⅝" cross-section
- **Tow-vehicle plug:** Many types of plugs available, prewired at the factory; contact factory for details
- **Outriggers**
- Telescoping outriggers (jack extensions), one at each corner of the trailer, expand trailer width when deployed, for extra wind-load resistance
- Width of trailer with outriggers extended: 131" (333cm)
- **Hand pump:** A mechanical hand pump can raise and lower the sign if batteries go dead and hydraulic lift fails to operate. Pump handle is stored inside battery box.

- **Power**
- **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
- Options
- Two additional 6Vdc deep-cycle batteries, 215Ah additional capacity
- Four additional 6Vdc deep-cycle batteries, 430Ah additional capacity
- **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 lbs. (72kg) each
- Remote charger: When required for added battery charging capacity, replace standard remote charger with higher amperage charger
- **Options:**
  - 12-volt, 45-amp charger
  - 12-volt, 75-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
- 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
- Options include 130W, 170W, and 260W solar arrays; contact factory for details
- **Secure battery box:** High-security battery box features heavy-gauge steel lid, hidden hinges, and heavy-duty hidden-shackle padlocks. Replaces standard battery box.
- **Taillights:** Dual sealed-bulb: Dual sealed-bulb taillights replace standard sealed-bulb taillights
- Requires SAE J560 7-pole round-pin trailer plug to replace standard trailer plug
- **Single LED:** Single LED taillights replace standard sealed-bulb taillights
- **Dual LED:** Dual LED taillights replace standard sealed-bulb taillights
- Requires SAE J560 7-pole round-pin trailer plug to replace standard trailer plug
- **Reflective tape:** Reflective red-and-white conspicuity tape across rear trailer frame for increased visibility
- **Finish color:** Specify power-coat color and, if applicable, color scheme

Radar-based speed monitoring system

- **Description:** Radar senses the largest, nearest mass moving toward it. The message sign conveys a user-selected message to the motorist.
- **Sensor:** Microwave K-band, approach-only
- **Location:** Radar head located on the bottom of the message sign display cabinet, just off-center, for maximum effectiveness regardless of which side of the road the trailer is being used
- **Enclosure:** Radar head is sealed to withstand the elements, while an aluminum cover goes over the head unit for impact resistance
- **Standards compliance:** FCC approved, CE compliant
- **Distance range:** 1000 ft. (305 m)
- Speed range: 5 to 138 mph (8 to 222 km/h)
- **Accuracy:** mph
  - ±1 mph from 5 to 40 mph
  - ±2 mph from >40 to 100 mph
- **Accuracy:** km/h
  - ±1.6 km/h from 8 to 64 km/h
  - ±3.2 km/h from >64 to 161 km/h
- **Electrical protection:** Fused and reverse-polarity protected
- **Calibration:** Calibration not required

Cellular modem package

- **Purpose:** The remote communications package enables the message sign to be controlled from remote locations away from the message sign, using an Internet-connected computer, tablet, or smartphone. Includes all of the items described below.

Remote NTCIP central control software

- **Description:** Easy-to-use program connects a computer to an individual message sign via an Internet connection. Used for changing messages, checking on trailer health status (such as battery voltages), viewing GPS locations, and setting message schedules.
- **System requirements:** Microsoft® Windows® (most versions), .NET framework, Internet connection

Web-based remote control

- **Description:** Using a standard Web browser, allows connection to an individual message sign without software. Ideal for smartphone users.
- System requirements: Modern standards-compliant Web browser with JavaScript enabled
- A platform that supports one of these browsers (smartphone, tablet, or computer),
- Internet connection

Exhbit A: Message Fonts

Font 1

- 5 x 7 pixels
- Equivalent size: 8.85” x 12.55” (225 x 319mm)
- Physical size: 8.15” x 11.85” (207 x 301mm)
- Standard fixed-width font with lower-case letters
- 3 lines of 8 characters, maximum

Font 2

- 5 x 7 pixels
- Equivalent size: 8.85” x 12.55” (225 x 319mm)
- Physical size: 8.15” x 11.85” (207 x 301mm)
- Fixed-width font with lower-case letters
- 3 lines of 8 characters, maximum

Font 3

- 6 x 9 pixels
- Equivalent size: 10.70” x 16.25” (272 x 413mm)
- Physical size: 10.00” x 15.55” (254 x 395mm)
- Bold proportional font with 4x9-pixel capitals for lower-case letters
- 2 lines of 7 characters, typical

Exhbit A: Message Fonts

Font 4

- 6 x 11 pixels
- Equivalent size: 10.70” x 19.95” (272 x 507mm)
- Physical size: 10.00” x 19.25” (254 x 489mm)
- Bold proportional font with lower-case letters and accented characters
- 2 lines of 6 characters, typical

Font 5

- 6 x 11 pixels
- Equivalent size: 10.70” x 19.95” (272 x 507mm)
- Physical size: 10.00” x 19.25” (254 x 489mm)
- Bold proportional font with lower-case letters, accented characters, and increased spacing
- 2 lines of 6 characters, typical

Font 6

- 5 x 12 pixels
- Equivalent size: 8.85” x 21.80” (225 x 554mm)
- Physical size: 8.15” x 21.10” (207 x 536mm)
- Tall fixed-width font with 5x8-pixel capitals for lower-case letters
- 2 lines of 8 characters, maximum

Font 7

- 7 x 12 pixels
- Equivalent size: 12.55” x 21.80” (319 x 554mm)
- Physical size: 11.85” x 21.10” (301 x 536mm)
- Bold fixed-width font with 6x8-pixel capitals for lower-case letters
- 2 lines of 6 characters, maximum

Font 8

- 7 x 23 pixels
- Equivalent size: 12.55” x 42.15” (319 x 1071mm)
- Physical size: 11.85” x 41.46” (301 x 1053mm)
- Large fixed-width font with 6x14-pixel capitals for lower-case letters
- 1 line of 6 characters, maximum

Exhbit A: Message Fonts

Font 9

- 11 x 23 pixels
- Equivalent size: 19.95” x 42.15” (507 x 1071mm)
- Physical size: 19.25” x 41.46” (489 x 1053mm)
- Large bold fixed-width font, capitals only (no lower-case letters)
- 1 line of 4 characters, maximum

Font 10

- 4 x 5 pixels
- Equivalent size: 7.00” x 8.85” (178 x 225mm)
- Physical size: 6.30” x 8.15” (160 x 207mm)
- Mini proportional font with limited lower-case
- 4 lines of 9 characters, typical
- 12 characters per line, maximum

Font 11

- 7 x 10 pixels
- Equivalent size: 12.55” x 18.10” (319 x 460mm)
- Physical size: 11.85” x 17.40” (301 x 442mm)
- Large fixed-width font, capitals only (no lower-case letters)
- 2 lines of 5 characters, maximum

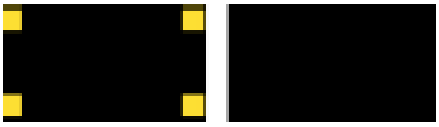
Font 12

- 9 x 14 pixels
- Equivalent size: 16.25” x 25.50” (413 x 648mm)
- Physical size: 15.55” x 24.81” (395 x 630mm)
- Large bold fixed-width font, capitals only (no lower-case letters)
- 1 line of 4 characters, maximum

Exhbit B: Arrow Board Functions

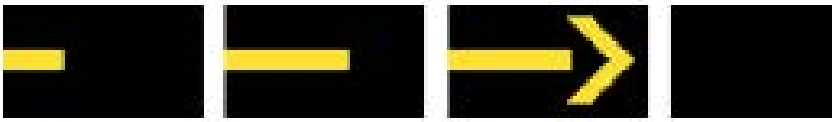
Flashing left or right arrow

Flashing double arrow

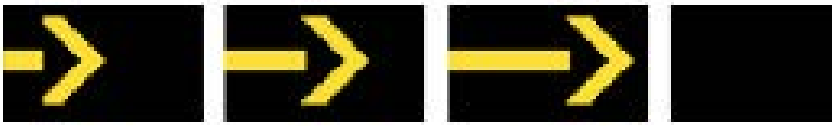


Flashing four-corner warning

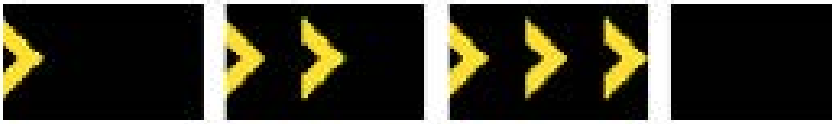
Flashing caution-bar warning



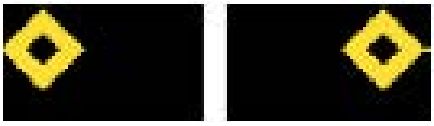
Sequencing left or right stem arrow



Sequencing left or right walking arrow



Sequencing left or right chevron arrows



Alternating diamonds

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