

Digibrite Advantage 131T

LED 2 Digit Radar Speed Display

Product Specifications





*2755 Bankers Industrial Drive
Atlanta, GA 30360
Phone: 770-448-6650
Fax: 770-448-8970*

1. SCOPE

This specification defines the characteristics and features of an all LED, two digit, trailer mounted speed display sign.

- The system shall be equipped with a traffic radar operating in an “approach only” mode such that only the speeds of approaching vehicles exceeding the user selectable “threshold” or “trigger” speed will be displayed.
- Optionally, all speeds greater than a lower practical limit of ten miles per hour (10 mph), but less than or equal to ninety-nine miles per hour (99 mph) may be displayed.
- The system shall optionally provide for the display of a static speed limit sign meeting the requirements of the Manual on Uniform Traffic Control Devices aside of the LED display.
- Meets or exceeds standards set forth in:
 - FHWA
 - MUTCD

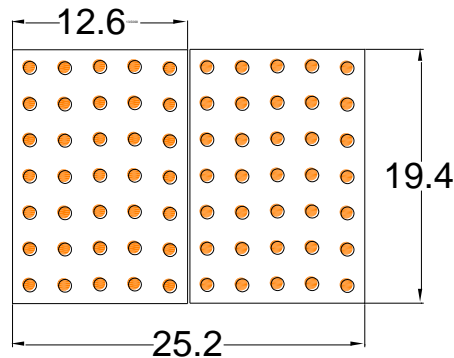
IMPORTANT FEATURES:

- Heavy duty all steel welded trailer frame to ensure long life and excellent durability
- Two-coat automotive paint process to protect it from weather and road hazards

2. DISPLAY

2.1. Description:

- The Digibrite Advantage 131T display shall consist of an LED pixel matrix comprised of a configuration specific to the sign model.
- Each display shall be configured of all light emitting diode (LED) with each having operational characteristics of Amber 590nm LEDs with a 30° cone of angularity.
- The display shall consist of two panels.
- Panel size - 19.4" high by 12.6" wide



2.2. Display Panels:

- Each display panel shall be 100% solid state with no moving parts or switches, shall be identical to, and mutually interchangeably with, all other panels.
- No field hardware or programming modifications shall be required to exchange or replace individual display panels.
- Each display panel shall contain the LED driver circuitry necessary to operate its associated LED's.
- There shall be no separate driver boards between the display panels and the central processing unit (CPU).
- Each individual panel shall have the following layout characteristics specific to the sign type.
 - 4 LEDs per Pixel
 - Pixel Layout per Panel – 7 Rows X 5 Columns
 - Pixel Spacing – 2.80" High X 2.70" Wide
 - LED Angularity – 30 degrees
- Each panel shall be able to monitor and determine pixel failure.
- Pixel failure will be represented on host software and local control system identifying location of failed pixel.
- Controller display will be in WYSIWYG format, (What You See Is What You Get.).



2.3. LED Pixels:

- Individual pixels shall consist of two (2) pairs of LED's.
- The LED's shall be 30° ITE amber (590 nm) ultra-bright AlInGaP, shall be rated for 100,000 hours of operation, and shall have an operating temperature range of -40° F to + 165° F.
- An individual pixel shall consist of four Dynapoint™ lens enhanced LED's spaced on 1.0" centers both vertically and horizontally.
- The LED's shall be ITE amber wide angle providing for both daylight and nighttime legibility and shall be rated for a service life of 100,000 hours, and shall have an operating temperature range of - 40° F. to + 165° F.
- General Characteristics:
 - Number of Pixels: 35 standard, 7 pixels rows, 5 pixel columns
 - Number of LED's per pixel: 4 standard
 - Operating Voltage: 12VDC nominal
 - Brightness Control: Pulse width modulation
 - Current Limiting: One external resistor per driver
 - Pixel Feedback: Differential amplifier per pixel (where provided)
 - Feedback Logic: CPLD on-board
 - Column Decoding: CPLD on-board
 - Optics: Dynapoint™ Lens System
 - LED Driver: Power shift register technology with programmable current limit
 - Temperature Range: -40° F to +165° F

2.4. Display Power Supply:

- The power supply for the display shall be sufficient to operate the LED pixels for both daylight and nighttime conditions
- It shall be suitably regulated and temperature-stable and fully operational in the temperature range of - 40 degrees F. to + 165 degrees F.

2.5. Panel Wiring:

- The display panel wiring shall be comprised of one wiring harness for each column of display panels with positive locking connectors at the CPU and at the individual display panels.
- The harnesses shall be comprised of twenty gauge, or larger, individual conductors (no ribbon cables), and shall be configured so as to preclude data from a malfunctioning display panel column being transmitted to and corrupting any other display panel column in the sign display.



3. 12 VDC POWER SOURCE

3.1. Description: The 12 VDC power source for the sign system shall be provided by a 12 VDC battery bank in a weather-proof lockable cabinet as follows:

3.1.1. System:

- The system shall be provided with a dedicated battery pack which will yield 25+ days of run time (continuous operation of the arrow panel without solar charging).
 - Battery Type – sealed lead acid 12VDC Bright Way Group
 - 20° Amp Hour Rating - 18 Amp Hours
 - Number of Batteries - 6

3.2. Charging: The charging system for the primary power supply shall be as follows:

- The charging system shall be a solar system consisting of a photovoltaic array supplying electrical energy to the batteries through a solar regulator.
- The system shall provide “on demand” charging consistent with battery condition and with the solar luminance at the photovoltaic array.
- The trailer may also be equipped with an optional 110 VAC receptacle.
- The optional 110 VAC charging system shall initiate charging automatically when 110 VAC service is connected, and shall be capable of completely charging the battery pack within a 24 hour time period. The actual charging time will vary depending upon conditions and state of charge/discharge of the batteries. Initiation of 110 VAC charging shall completely disconnect the solar charging capability from the charging circuit.

3.2.1. System:

Sign Model	Solar Panel Wattage	# of Panels
131T	40 Watts	1



4. CENTRAL PROCESSING UNIT

4.1. Description:

- The CPU shall consist of a single printed circuit board which shall contain all of the sign message memory as well as the sign operating software.
- The CPU shall be a conformal coated 100% solid state unit with no moving parts or switches, shall be operable in 0-95% non-condensing humidity conditions at temperatures from -30 degrees F to +165 degrees F, and shall include provision(s) for protection against damage should the 12 VDC power source be incorrectly connected with the leads reversed.
- The CPU shall be capable of operating the sign system in the event that the keyboard controller is disconnected.

4.2. CPU Location: The CPU shall be located within the sign case behind the display panels and shall be mounted on the display panel support structure.

4.3. CPU Wiring: For ease of maintenance, the CPU shall contain all of the terminal connectors for the display panel wiring harnesses and the keyboard terminal harness.

5. DISPLAY CONTROLLER

5.1. Description:

- The sign controller shall utilize industry standard VT 100 cursor control commands, shall be nominally 4.8" x 9.9" x 2.0", shall be removable, and shall be mounted within the control cabinet utilizing easily removable retainers.
- Removing the keyboard and disconnecting the electrical connections shall not interrupt the fully operational status of the sign display.
- The keyboard terminal shall consist of a standard keyboard and a backlit 4 line x 20 character /line liquid crystal display.
- The LCD characters shall be nominally 0.2" in height.
- The terminal shall be weather-tight, shall be manufactured with conformal-coated circuit boards capable of operation in 0-95% non-condensing humidity conditions, and shall be rated for operation from -30 degrees F to +165 degrees F.

5.2. Location: The keyboard terminal shall be located in the control cabinet, mounted with easily removed retainers, and detachable from the electrical umbilical connector while maintaining sign operation.



6. SIGN CASE

6.1. Description:

- The sign case shall be of all aluminum construction fabricated utilizing ASTM B 209 6063-T5 extrusions and 3003-H14 sheet material.
- The case shall be nominally 7” in thickness and conform to the list matrix below.
- The sign case shall be painted flat black on all interior and exterior surfaces.

6.2. Lens:

- The lens shall consist of a single piece of polycarbonate plastic that shall serve as the front of the sign case and shall be hinged at the top to facilitate access to the interior of the case for servicing of the sign.
- The lens shall be 1/4” in thickness per accepted plastic industry convention and shall be suitably stabilized to resist degradation due to exposure to ultraviolet (UV) radiation.
- Each pixel shall be provided with an unscreened window while the remainder of the lens (nominally 63%) shall have the front surface screened with a flat black ink to reduce glare from ambient solar illumination or from vehicle headlights.

Sign Model	Case Width	Case Height
131T	36”	33.9”

6.3. Sign Case Housing: The sign case shall contain the display panels, the CPU, the display power supply, wiring harnesses, and the photocell.

7. STATIC SPEED LIMIT SIGN

7.1 Description:

- The system shall optionally provide for the display of a static speed limit sign to the side of the LED display.
- The speed limit sign shall be provided with interchangeable numerals to allow the display of speed limits ranging from twenty-five miles per hour (25 mph) to seventy-five miles per hour (75 mph) in five miles per hour (5 mph) increments.
- The static speed limit sign shall comply with MUTCD Part II, Section 2A-16 *Illumination and Reflectorization* and Section 2B-16 *Speed Limit Sign* (R2-1).
- Optional sized speed limit signs are available to meet individual State specifications.



8. SIGN SUPPORT

8.1. Description:

- The raising and lowering mechanism shall approximate that of a manually-operated winch & pulley system or optional electro-hydraulic cylinder center pole vertical mast.
- The solar array shall be mounted on a level mechanism such that the array is maintained in a horizontal plane regardless of the position of the sign case.
- The pivot mechanism shall be constructed such that a single operator can deploy the display and the solar array simultaneously while maintaining proper positioning of the array.
- The raising/lowering of the display can be facilitated by an optional electric hydraulic cylinder mast rated for 2,000 lbs.
- The height of the trailer mounted sign in the transport mode shall be 97" to the top of the solar array, and in the display mode, 132" to the top of the solar array.

9. TRANSPORT VEHICLE

9.1. Trailer: The trailer shall meet the following requirements:

9.1.1. Description:

- The trailer shall be 108" in length with the retractable and removable tongue in place and 72" in width.
- It shall be constructed of 3" x 2" steel tube (ASTM A 500 Grade B) with 1/8" wall thickness and shall be welded in accordance with applicable American Welding Society (AWS) standards.
- The trailer shall have a lockable, weatherproof control cabinet housing the controller, and a lockable battery box for the 12 VDC power source batteries.

9.1.2. Rating:

- The axle shall be rated for 1900 pounds, the springs for 1900 pounds each set,
- The wheels shall be 13" steel with 5 lugs bolts per wheel and fitted with 175-80-13 C rated tires.
- The retractable tongue shall be fitted with a 2" ball coupler rated for 5000 pounds.
- Standard axle is leaf spring, customer may upgrade to a torsion suspension system if required.

9.1.3. Removable / Retractable Tongue:

- The retractable tongue shall be fabricated from 2" X 2" steel tube (ASTM A 500 Grade B) with 1/8" wall thickness, shall be affixed to the body of the trailer, and shall have safety chains attached.
- The lighting lead shall be affixed permanently to the tongue and shall separate from the trailer wiring harness at a plug connector when the tongue is removed or retracted.

9.1.4 Leveling Jacks:

- The trailer chassis shall have at each corner a 2000 pound leveling jack affixed in such a manner that the jacks may be readily placed and locked in a horizontal position for traveling without necessitating the use of any tools.
- The trailer and sign assembly, when stationary and supported properly with the leveling jacks shall withstand AASHTO rated 100 MPH wind gusts.



10. OPTIONS:

10.1. Description: The sign may be equipped with any of the following devices for communications, data acquisition, and/or information dissemination.

10.2. Remote Communications: The remote communications package shall enable the sign to be controlled by an operator at a host device with Internet connectivity and a compatible browser program. All functions local to the sign controller shall be accessible in the remote software including scheduling and password protection. The mode for remote communications is able to be any of the following; Cellular, CDPD, Wireless RF, Satellite, or Landline.

10.3 Radar Data Logging Capability: Signs used in conjunction with Radar Option and onboard traffic statistics computer can be utilized to collect traffic data such as average speeds, 85th percentile, 50th percentile, and average # of cars. All data is presented in graph format accessed within the software.

10.4 Simulated Camera: The unit may be outfitted with a strobe light contained in the radar housing facing oncoming traffic that will flash to simulate photo radar when the trigger speed is exceeded. This feature is programmable independently of the displayed speed.

10.5 Work Zone Alert: The unit may be outfitted with a 100-watt siren and rotating amber warning light that are activated to warn work zone workers when the trigger speed is exceeded. This feature is programmable independently of the displayed speed.

10.6 Expanded Power Configurations: The Advantage Series models can be outfitted with additional batteries and solar panels.

10.7 Wireless handheld terminal: The handheld terminal can be equipped with a Bluetooth radio to allow for untethered operation of the sign.

10.8 Miscellaneous: American Signal is able to meet the user's needs for additional hardware items. We are able to provide any hitch type (Ball, Pintle or Lunette Eye, Bulldog, Adjusting Height, etc...), axle type, lift requirements, color specifications, alarms, etc.

Note of Application: *This specification is widely applicable to catalog items AMS60065210, AMS60065211, AMS60065220, AMS60065225. Catalog designations and this specification are subject to change without notice.*