



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

Digibrite Advantage 131T
LED 2 Digit Radar Speed Display
Specifications rev 1229

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.

2. DISPLAY

2.1. Description: The display shall consist of an LED pixel matrix comprised of a configuration specific to the sign model. Each sign shall have the following characteristics for the display panels.

Sign Model	Matrix Config.	# of LEDs	# of Panels	Panel Height	Panel Width
131T	7 x 5	4	2	19.4”	12.6”

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.

Sign Model	LEDs per Pixel	Panel Layout (Row x Column)	Pixel Spacing (Height x Width)	LED Angularity
131T	4	7 x 5	2.8” x 2.7”	30°

2.3. 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 -22° 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, shall be suitably regulated and temperature-stable and fully operational in the temperature range of - 30 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. Trailer Mounted System: The trailer-mounted system shall be provided with a dedicated battery pack consisting of the following banks, with the minimum supplying a nominal 14-day run time with no additional charging.

Sign Model	Battery Type	20° Amp Hour Rating	# of Batteries
131T	6VDC	215 A	2-8

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

3.2.1. Trailer Mounted System: The charging system for a trailer mounted sign 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 shall also be equipped with an optional 110 VAC receptacle as well as a temperature stable 110 VAC battery trickle charger and ammeter. The 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 48 to 72 (nominal) 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.

Sign Model	Solar Panel Wattage	# of Panels	Amp Rating Max Power Current (Amps)
131T	80-160 Watts	1-2	5.15

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. SIGN KEYBOARD TERMINAL

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: For trailer-mounted signs, the trailer shall meet the following requirements:

9.1.1. Description: The trailer shall be 137” in length with the removable tongue in place and 72” in width, shall be constructed of 3” x 3” 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 keyboard terminal, control panel, and a lockable battery box for the 12 VDC power source batteries. The trailer frame can optionally be delineated with retro-reflective (conspicuity) material.

9.1.2. Rating: The axle shall be rated for 2000 pounds, the springs for 1300 pounds each set, and the wheels shall be 13 “ steel with 5 lugs bolts per wheel and fitted with 175-60-13 C rated tires. The removable 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 Tongue: The removable tongue shall be fabricated from 3” x 3” steel tube (ASTM A 500 Grade B) with 3/8” wall thickness, shall be affixed to the body of the trailer with a retaining pin positioned in the floor of the battery box, 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. The tongue shall optionally be fitted with a 2,000-pound leveling jack, which shall swivel to a horizontal position during transport without necessitating the use of tools.

9.1.4. Stabilizing Outriggers: Each corner of the trailer shall be fitted with Telespar-style leveling jacks or optional screw jacks to stabilize the trailer when in the display position. The screw jacks shall pivot to a horizontal position for transport.



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 computer utilizing Easyhost™ remote software. 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 Digital Pager On/Off Activation: The unit may be optionally outfitted with a digital pager to activate the unit to turn on or off remotely. Service provided by others.

10.4 Radar Data Logging Capability: Signs used in conjunction with Radar Option and EasyHost™ Software with Datalogging Option 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.

10.5 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.

10.6 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.

10.7 Plus Trailer chassis: The Plus trailer chassis provides a smaller footprint than the standard Advantage-series trailer. A higher quantity of units can be shipped or stored together with the Plus trailer.

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

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

10.10 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.*