

Attachment 1

Dispatch Photos





Att 2

MANUAL REORDER INFORMATION: Specify Luminator TwinVision Publication Number 905127 Revision B

Luminator TwinVision

Smart Series II Sign System

Amber and Silver Series

OPERATIONS AND MAINTENANCE MANUAL

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Contact name _____

SAFETY SUMMARY

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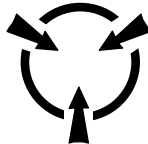
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Observe all safety regulations.
Do not perform maintenance or service to equipment with the power turned on.
To avoid injury, always remove power.
Discharge and ground a circuit before touching it.

DO NOT SERVICE OR ADJUST ALONE

Never reach into equipment with power applied.
Always have someone present who is capable of rendering aid.

CAUTION



ELECTROSTATIC SENSITIVE DEVICES

ELECTROSTATIC CHARGE PREVENTION IS RECOMMENDED.
USE WRIST GROUNDING STRAP AND/OR ANTISTATIC GROUNDED FLOOR MAT
WHILE HANDLING ANY PWA.

PLACE PWA IN ANTISTATIC BAG FOR TRANSPORTING AND STORING.
SHOULD ANY PWA BE DETERMINED DEFECTIVE, REFER IT TO ELECTRONICS
BENCH SERVICE, OR RETURN IT TO LUMINATOR TWINVISION FOR REPAIR AND
OR REPLACEMENT.

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Table 1-1. How to Contact Luminator TwinVision

Purpose	Contact Information	
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Training	Mon. thru Fri., 8:00 AM to 5:00 PM CT	1 (972) 424-6511
Website	www.twinvision signs.com	

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SECTION 1

SIGN SYSTEM DESCRIPTION

1.1 Introduction

The Luminator TwinVision Smart Series II Sign System Amber and Silver Series Operations and Maintenance manual provides mechanics with the information required to operate and maintain Smart Series II Amber or Silver Series vehicle signage. A description of the signs, information about how to operate, maintain, troubleshoot, and test the signs, and cable, wiring and illustrated parts drawings are provided.

1.2 Audience

The audience for this manual is transit agency maintenance personnel and mechanics who are responsible for managing and maintaining vehicle on-board signs. It is assumed that the user of this manual is familiar with Windows-based user terminology, interface elements, and navigation.

1.3 Conventions

The following symbols may appear throughout the document to indicate information that is important to you. The symbols you *may* see include:

Danger



Hardware: This information **MUST** be followed or catastrophic equipment failure or bodily injury may occur.

Software: This information **MUST** be heeded or followed to prevent data loss, degradation or unpredictable results.

Caution or Warning



Hardware: Alerts the user to important points about integrating the product, if these points are not followed, the product and end user equipment may fail or malfunction.

Software: Indicates information that is important to know regarding how the application processes the information, the significance of a user action, etc.

Tip or Information



Hardware: Provides advice and suggestions that may be useful when integrating the product.

Software: Information that is provided for informative purposes and provides advice and suggestions that may be useful.

1.4 List of Abbreviations and Acronyms

This section contains a glossary of common abbreviations and definitions that *may* be used in this document.

ADA	Americans with Disabilities Act
AR	As required
Assy	Assembly
DC	Direct Current
EA	Emergency Alarm
EDSS	Electronic Destination Sign Systems
I/O	Input / Output
OCU	Operator Control Unit
OEM	Original Equipment Manufacturer
LED	Light Emitting Diode
PCB	Printed Circuit Board
PR	Public Relations
RMA	Return Material Authorization
SDB	Sign Driver Board
USB	Universal Serial Bus
VDC	Volts Direct Current
VFD	Vacuum Florescent Display
VLU	Vehicle Logic Unit

SECTION 2

SIGN SPECIFICATIONS AND SET-UP

The Luminator TwinVision Smart Series II sign system is the next generation of intelligent Electronic Destination Sign Systems (EDSS) designed for use on mass transit vehicles, and the Smart Series II signs features:

- Solid state design
- LED operation life of a minimum 100,000 hours
- Energy efficient 24 VDC operation
- Open architecture
- Superior brightness and visibility
- Americans with Disabilities Act (ADA)-compliant fonts and graphics

Each Smart Series II sign has a unique ID that is assigned to it during manufacturing. The unique sign ID makes it possible to install signs into the sign system (including multiple units of the same sign type) without requiring the use of DIP or rotary switches to identify and configure the sign. Three Smart Series II sign systems are available:

- Smart Series II Amber Series
- Smart Series II Silver Series
- Smart Series II Chroma Series

The Amber Series signs display messages using amber LED lights. The Silver Series signs display messages using white LEDs. All Smart Series II signs are American with Disabilities Act-compliant and are capable of displaying ADA-approved fonts, graphics and messages using LED lights. All sign display areas are readable in direct sunlight, at night and in all other possible lighting conditions. The LED display area evenly distributes illumination to the un-aided eye.



Note: The Chroma Series is outside the scope of this document and is described in a separate operations and maintenance manual. Refer to the respective Luminator TwinVision manuals for information about the Chroma sign series.

The Amber sign family may include a combination of the following signs and an operator control unit:

- A front sign
- One or more side signs (street, curb, or street and curb)
- A rear sign
- A dash sign (optional, also called the route or block sign)
- An Operator Control Unit (OCU)

A Smart Series II sign system must include one front sign, any combination of additional signs available in the series and an OCU. All installed signs must be part of the same Smart Series II sign family. The OCU is required and is used to communicate with the sign system. The sign system frequently interfaces with a third party emergency alarm that is installed on the vehicle.

Smart Series II signs will support emergency messaging using the emergency alarm. **Figure 2-1** represents a typical Smart Series II sign configuration.

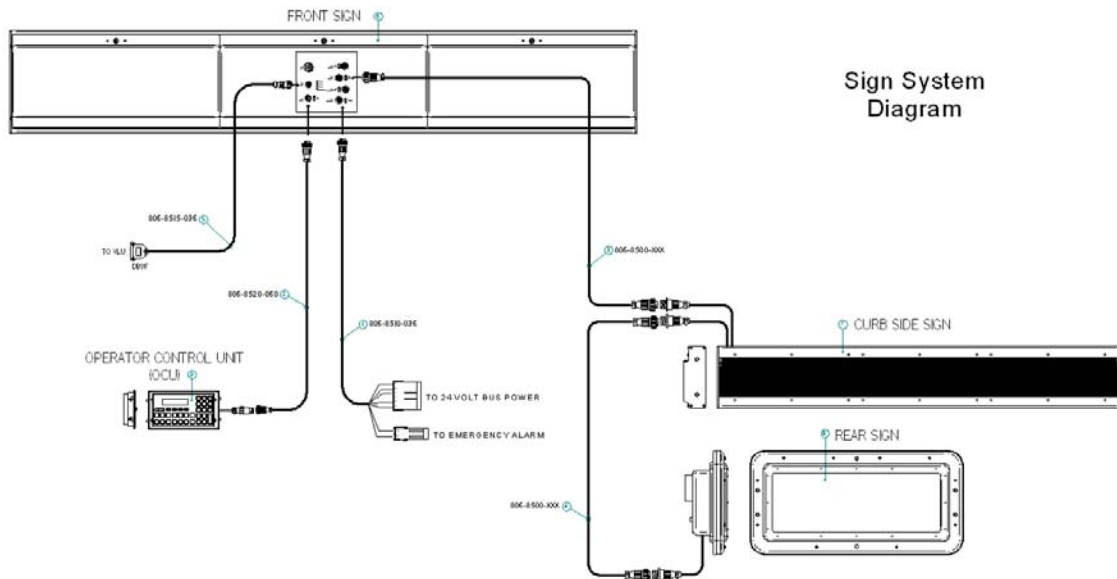


Figure 2-1. Typical Smart Series II Sign System Configuration

The Smart Series II sign system is microprocessor-based and incorporates multiple bi-directional serial communications (SAE J1708/1587, RS-485 and RS-232). The system implements RS-485 communication protocol within and between components and incorporates error detection techniques within the communication protocol.

SECTION 3

SIGN SYSTEM COMPONENTS

Each Smart Series II Sign System - Amber and/or Silver Series sign is equipped with components that provide the sign with functionality required to display messages and to interface with interface system components. Which components are mounted on the signs vary depending on the type of sign.

The front sign is equipped with the following components:

- LED boards
- System master controller with a transition board
- Sign-specific internal power supply

System-level components are mounted on printed circuit boards that are installed internally in the front sign. The front sign also provides connectors and status LEDs that provide visual system-level operational feedback. **Figure 3-1** illustrates the front sign back panel which provides system level connectors, visual operations feedback, and access to system fuses.



Figure 3-1. Front Sign Back Panel

The street or curb signs are equipped with these components:

- LED boards
- Power supply
- Sign ID board
- Sign driver board

The front sign is connected to the vehicle power supply. The street side, curb side and dash signs are directly connected to the front sign. The rear sign may be daisy chained to the curb side sign. **Table 3-1** lists the components and on which signs the components are mounted.

Table 3-1. Sign System Components

Sign System Component	Function	Signs
LED boards	Electronic boards on which LED lights are mounted. LED boards vary by the number of LEDs used, matrix and pitch.	Front, street and curb, rear, dash
Sign ID board	Stores the imbedded sign ID that was assigned during manufacturing.	Street and curb
Sign driver board	Receives destination data from the system master controller, processes the data and displays the resulting message on a sign.	Street and curb
System master controller	Resides in front sign only and provides power to the signs, manages system communication, and stores data. Provides the central processor and data storage functionality required to operate the signs. Stores data files used to display information on the signs. Draws power from the vehicle power supply.	Front
Power supply (sign- specific)	A Smart Series II sign is equipped with a power supply. The power supply provides power to the sign LED display board. Front and street signs include separate dedicated power supply units. Rear and dash signs have dedicated power supplies integrated on the PC board.	Front, street and curb
Operator control unit (OCU)	Operator control unit (OCU)	

Sign System Component	Function	Signs
Cabling system	A series of multi-connector cables used to connect the signs. Cables are manufactured out of yellow cable that visually distinguishes sign cables from other vehicle cables. The front sign is cabled to the vehicle power source and the side sign is connected to the front sign. The rear sign is usually connected to the side sign in a daisy chain configuration. Optional street and dash signs plug directly into the system master controller (front sign).	

Included with the sign system is the cabling required to connect the sign system to the vehicle power source and to cable the signs together. All required cables are shipped with the signs. The Smart Series II accepts optional inputs for a wheel chair lift, emergency alarm switch, and a stop brake switch. Optional input devices can be added to the J1 cable configuration and associated with an LED (available in the discrettes).

3.1 System and Sign Power Supplies

The power supplies used with Smart Series II Amber series signs have the following part numbers:

- Front sign: PN# 916-PWRS-203
- Side sign: PN# 916-PWRS-223

The power supplies used with Smart Series II Silver series signs have the following part numbers:

- Front sign: PN# 916-PWRS-207
- Side sign: PN# 916-PWRS-207

Input voltage is 24 VDC nominal with an output voltage of 3.3 VDC nominal for the Amber signs and 4.0 VDC nominal for the Silver signs. **Table 3-2** describes the input with output voltage levels the power supply supports and the signs with which the power supply is used.

Table 3-2. Power Supply Voltage

Voltage Output Type	Voltage	Signs	Description
INPUT – SWITCHED	+24 VDC	All signs	Voltage comes from the ignition system by way of the master run switch and is used to start and shut down the sign system.
OUTPUT	3.3 VDC - Amber 4.0 VDC - Silver	Front, street, curb	Powers the LED display boards.

3.2 LED Boards

Every sign includes one or more LED boards as the signs differ by matrix dimensions according to their purpose and or placement within the vehicle.

3.3 System Master Controller (Front Sign)

The *System Master Controller* is installed in the front sign only and supplies a power path and data communication to each of the sign branches in the system. It includes a central processor, data storage, status indicator LEDs and provides required connectors. Sign system operating system, message database, destination data, public relations data and emergency message data are loaded into the central processing unit's data storage during sign system deployment. As many as 10,000 message lines can be stored in the data storage. System data is updated periodically based on the agency's data requirements using a manual or a future wireless update feature option. **Figure 3-2** illustrates the system master controller mounted on the front sign back panel.



Figure 3-2. System Master Controller

The system master controller does not use switches or jumper cables to address the signs. Instead, the system master controller utilizes each sign's unique ID to identify and communicate to the sign.

Vehicle power is supplied to the system master controller from the vehicle power source over a cable (PN# 806-8510-xxx, where "xxx" denotes numerical cable length). The system master controller disperses the power and data to the sign branches over interconnect cables. Each sign circuit is fused to the system master controller.

3.4 Sign ID Board for Side Sign

The *Sign ID Board* for the side sign is a separate Printed Circuit Board (PCB) that contains a unique sign identifier that is assigned to the sign during manufacturing. The sign ID identifies the sign and serves as a sign's system address. Hard coded sign IDs replace the use of jumpers and dip switches for use in identifying the signs in the sign system. The sign ID board is cabled to the sign driver board.

3.5 Sign Driver Board for Side Sign

The *Sign Driver Board (SDB)* receives destination data from the system master controller, processes the data and displays the resulting message on a sign. The SDB component is included in curb and street signs. The SDB is mounted inside the street and curb side signs on the rear cover.

Note: The rear and dash sign IDs are *included* on these signs' PCB that eliminates the need for a second board. Thus, front (master), rear and dash signs do not require a SDB.

An interconnect cable (PN# 806-8500-xxx, where "xxx" denotes numerical cable length) provides communication between the SDB and the system master controller using RS-485 protocol and 24 VDC sign power. **Table 3-3** lists and describes sign driver board components.

Table 3-3. Sign Driver Board Components

Feature	Description
LED Indicators	D1- Green Led shows presence of 3.3 VDC and 5 VDC supplied by integral converters.
Sign ID Set-Up	The SDB is automatically configured with each sign's ID when it is connected to the sign ID Board.
Dip Switch Settings	One set of four DIP switches is located on the SDB. It provides a unique ID address that distinguishes the sign. These switches are only used in the event that two identical signs on the bus are required to display different data.
Power and Signal Communications	24 VDC switched power is provided to the sign system. Power is initially distributed to the system master controller and is then distributed from the system master controller throughout the sign system over the interconnect cables. The SDB converts the 24 VDC into clean 5 VDC, via an integral DC-DC converter. A 12- pin Molex I/O connector provides the data and power connection to the driver.
Data Connector To LED Board	A conductor ribbon cable (PN# 946-8500-xxx) connects the SDB and the first LED board. The remaining LED boards are connected in series (daisy chained). The SDB communicates messages over the ribbon cable that indicates which LEDs must light and when they must light.

3.6 Fast Ethernet Port Feature

Some front signs are fitted with an optional Fast Ethernet Port Feature and corresponding connectors. If the feature is not ordered, the PCB and connectors will not be installed on the front sign. Consult with Customer Service regarding the function and availability of the optional Fast Ethernet Port feature.

3.7 Operator Control Unit

Smart Series II incorporates the Luminator TwinVision Slimline Operator Control Unit (OCU) in the sign system for use in selecting route, destination and message information that is displayed on the signs. The OCU is installed within reach of the vehicle operator where he or she will use the OCU to access and display messages on the signs. The OCU keypad provides audible feedback whenever a key is pressed. **Figure 3-3** illustrates the OCU front panel.



Figure 3-3. Slimline Operator Control Unit

The OCU provides the following features:

- 2-line, 20-character Vacuum Fluorescent Display (VFD)
- 28-key keypad
- USB port for use in uploading sign system data

The OCU communicates with the sign system master controller using an RS-485-compliant serial signal interface and interface bus. The USB port is used to update the sign system with route, destination, and message data. A protective rubber boot with lanyard is provided to keep dust and water out of the USB slot. The OCU connects to the front sign J3 connector using a cable that provides power and communication support. **Figure 3-4** illustrates the OCU back panel and connector.



Figure 3-4. Slimline OCU Back Panel and Connector

The OCU supports hexadecimal and alphanumeric command sets. The OCU keypad is configured to support either command set depending on the agency’s needs. **Table 3-4** describes the OCU keys.

Table 3-4. OCU Key and Key Command Summary

Key/Key Command	Description
MENU	The first key pressed as part of the programming sequence to upload destination and/or Public Relations (PR) information into the sign system. Pressing MENU displays the password screen.
ROUTE	Used to specify a route number to be used in conjunction with the destination information already present on the sign. In most systems it is not enabled. Displays two options: <ul style="list-style-type: none"> • Select a Route # • Select a Run # Option 1 is used with sign systems in which the “coded/codiert” functionality has been implemented. Option 2 is used in signs systems in which the run number is entered at the OCU.
P/R	Used to select a public relations message. The selected message specified using the P/R key command alternately appears with the normal destination sign display. Setting P/R to 0 will shut off the P/R message.

Key/Key Command	Description
DEST A and DEST B	These keys are used in conjunction with the numeric keypad to select a destination or to change a destination display.
0 through 9 keys	These keys are used to select destination locations.
A through F keys	These numbers are only used in a hexadecimal-addressing scheme and are used as part of the message list (e.g., addresses 6AF, 90, 12A, etc.). These keys are not used in a non-hexadecimal environment.
Arrow keys	Used to specify alphabetic characters for use in Run numbers. Press the > key to step alphabetic characters from A through Z order. Press the < key to display alphabetic characters from Z through A order.
ENTER	Used to submit a destination code character sequences or changed destination displays to the sign system.
Beeper	The rear of the unit contains a beeper that “beeps” each time a key is pressed by the operator, thus confirming that it has been activated.
F1-F4	F1 Not used F2 Not used F3 Not used F4 Provides access to optional screens that are used by technical personnel.



Note: It is not possible to use the OCU to edit loaded sign system information. The keyboard is used to access information that has already been programmed into the system only.

3.8 Cabling

Each Smart Series II sign provides a primary connection which is used to connect the sign to the sign system wiring scheme. The sign-to-sign cabling is made using yellow cable so that the sign cabling can be easily distinguished from other cables in the vehicle. There are five types of cables that are used with the system. **Table 3-5** lists the cables that are used with the Smart Series II sign system. Please note that the “xxx” designates a variable cable length and a final part number will have a number in this position.

Table 3-5. System Cables

Cable	Description	Part No.
OCU Cable	Connects front sign to the OCU	(806-8520-XXX)
Power Cable	Connects front sign to power / emergency alarm	(806-8510-XXX)
Sign Cables	Connects sign to sign	(806-8500-XXX)
Vehicle Logic Unit (VLU) Cable	Connects front sign to VLU (Optional)	(806-8515-XXX)
I/O Cable	Connects to vehicle for expanded I/O and serial communications. This is an optional cable and is only supplied when one or both rear sign ADA and STOP options are purchased.	(806-8517-036)

3.9 Optional Inputs

There are three optional inputs to the sign system:

- Emergency Alarm
- ADA (Wheel Chair Lift)
- STOP (Brake Activation)

3.10 Emergency Alarm Input

The *Emergency Alarm Input* is located on the front sign and is used to connect an OEM-supplied emergency switch to the sign system. The Emergency Alarm Input accepts any voltage in the range of 5 VDC to 30 VDC and is connected to the external emergency switch (momentary contacts are permissible). The signal is conveyed via the power cable (PN# 806-8510-xxx) and is carried through connector J7. Please note that this input is an optically isolates input that requires a return path (i.e., not connected to common ground).

3.10.1 ADA (Wheel Chair Lift) Input

Whenever the *ADA (Wheel Chair Lift) Input* is activated, the sign system displays a handicap loading symbol. The operator presses the wheel chair lift switch that activates the lift and signals the system master controller. The system master controller interrupts normal rear sign message display and displays the ADA symbol on the rear sign during wheel chair lift deployment. When the wheel chair lift service is ended and the lift has been stowed, the lift signals the system master controller which terminates the displayed symbol and re-displays the previously displayed route number.

3.10.2 Stop Brake Activation Input Switch

The sign system can be configured to display 'STOP' on the rear sign whenever the operator presses the vehicle brake pedal. The vehicle brake unit signals the system master controller which then displays 'STOP' on the rear sign. As soon as the operator stops pressing the break, the system master controller discontinues displaying the 'STOP' message and re-displays the previously displayed route number.

3.10.3 ADA/STOP Symbol Cable

If the agency has purchased the optional ADA feature and STOP symbol feature, the cable supplied to the original equipment manufacturer (OEM) for interfacing the ADA or STOP symbol is P/N 806-8517-036. This cable is plugged into the J1 connector on the front sign master controller panel. The ADA signal is found on pin A in the 2-pin Weatherpac connector and pin 6 in the 16-pin CPC connector. The STOP symbol signal is found on pin B in the 2-pin Weatherpac connector and pin 10 in the 16 pin CPC connector.

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SECTION 4 AMBER AND SILVER SIGNS

This section describes Smart Series II Amber and Silver signs. Each sign is described in terms of the sign's installation location, sign components, power supply, sign housing and a physical description is also provided.

4.1 Front Sign

Smart Series II Sign System - Amber and Silver Series front signs display destinations, public relation messages, route numbers, and specialized or custom graphics. It is installed in the head sign cavity above the operator inside the vehicle. The front sign provides vehicle front display features and functionality and contains system components that provide the sign system with power, system control, cable and operator control unit interfaces, and data communication and exchange. The system is powered by vehicle power and is connected to the vehicle's power source by two 24 VDC inputs that connect to the front sign. The front sign can be configured with an optional Fast Ethernet communications feature and connectors in preparation for future applications and feature upgrades, contact Customer Support for more information about this option. **Table 4-1** lists the components that are mounted on the front sign.

Table 4-1. Front Sign Components

Component	Description
Sign Components	<p>Multiple All-LED display boards powered by 3.3 VDC (amber) or 4.0 VDC (silver).</p> <ul style="list-style-type: none"> • System master controller with LED diagnostic panel • Transition board • 3.3 VDC Output power supply (2x if powering a 24 x 200 panel)
Power Supply	<p>24 VDC INPUT to 3.3 VDC OUTPUT (PN# 916-PWRS-203) amber or 4.0 VDC OUTPUT (PN# 916-PWRS-207) silver (mounted on right rear cover).</p>
Housing	<p>Consists of an extrusion capped by two solid aluminum side panels that accept multiple mounting alternatives. LED boards are mounted on the extrusions. The system master controller assembly, transition board, and power supply are mounted on the front sign center covers. The entire assembly is enclosed using three compression latches that require a special tool to open.</p>
LED Matrix Options	<p>16 x 160 (10 mm pitch) 16 x 160 (13 mm pitch) 24 x 200 (10 mm pitch)</p>

The front sign is mounted on the front of the bus near the top edge of the body and behind the windshield protection. It is enclosed in an accessible compartment provided by the vehicle manufacturer. Sign System Status LEDs located on the back panel are used to indicate sign system status as seen in picture **Figure 4-1**. The meanings of the Status LEDs are further described in **Table 4-2**.



Figure 4-1. Front Sign Status LEDs

Table 4-2. Front Sign Status LEDs

LED Type	Description
Discretet Active	<p>LEDs assigned to specific on-board systems. When an on-board system is active, the corresponding LED lights. When finished/inactive, the light darkens. The LEDs are allocated as follows:</p> <p>Input #1 Green ADA (optional feature)</p> <p>Input #2 Green ('Stop' (optional feature)</p> <p>Input #3 Green Currently not used</p> <p>Input #4 Green Currently not used</p> <p>Emergency Green</p>
System Status	<p>Indicates the operational status of the front sign, VLU (if present) and the system master controller. Green indicates normal functioning. Red indicates malfunction. The available system status LEDs include:</p> <ul style="list-style-type: none"> • Sign • VLU • Master
Component-specific Status	<p>Indicate status of the OCU, sign system power, and the attached street, curb (and street), and dash signs. The POWER LED indicates the presence of power to the sign (green when present) and should be lit continuously when power is present. The LED is off when power is not being delivered to the component. The STATUS LED is off when no power is being delivered to the sign, green when the sign is operating normally, and appears red when the sign is functioning abnormally.</p>
J3 through J7 sign connectors	<p>Sign connectors are equipped with LEDs to indicate the availability of power to the sign and sign status. The LEDs are labeled POWER and STATUS. The POWER LED appears green when power is present to the sign. This LED should appear green constantly for the duration of time the sign is in service. The POWER LED dims when the sign loses power, when the sign system no longer is distributing power and when the front sign is functioning abnormally.</p>



Note: When the Front Sign system status LEDs indicate questionable functioning, both the street sign and the rear sign may need trouble shooting.

The following series of photographs illustrate the front sign. Front sign components are fastened to the sign back panel. **Figure 4-2** illustrates the back of the LED boards, power supply, system master controller, sign transition board and cabling.

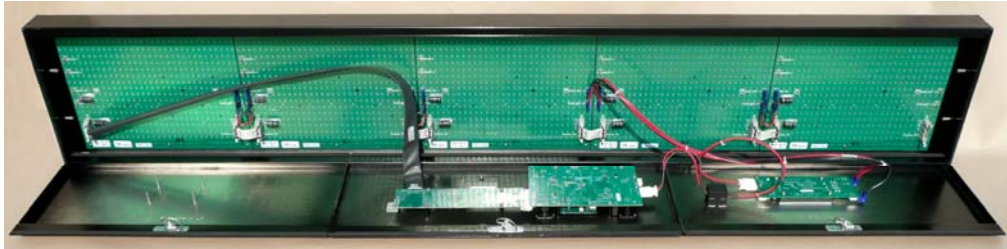


Figure 4-2. Exposed Front Sign LED Panel

Figure 4-3 illustrates the front sign internal components that are mounted on the front sign center panel.

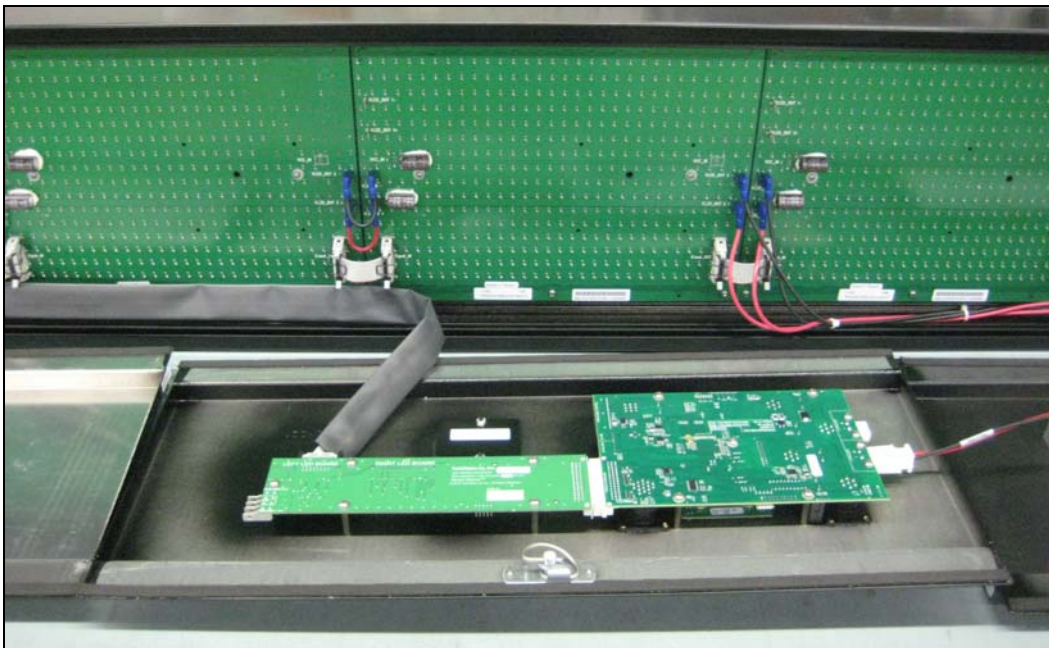


Figure 4-3. Front Sign Components

The front sign contains five LED panels **Figure 4-4** illustrates the front sign LED panels as seen from the front of the sign. **Figure 4-4** shows the front external view of the resulting display matrix (surface).



Figure 4-4. Front Sign LED Matrix

4.2 Side Sign

The side sign is used as both a curb side and/or street side sign and displays destinations, public relation messages, route numbers, and specialized or custom graphics. The sign can be mounted on either the curb side or street side of the vehicle.

The LED boards are interconnected to provide the actual sign length.

Table 4-3 lists the components mounted on a street or curb sign.

Table 4-3. Side Sign Components

Component	Description
Sign Components	Multiple all-LED boards powered by 3.3 VDC (amber) or 4.0 VDC (silver). <ul style="list-style-type: none"> • 3.3 VDC or 4.0 VDC power supply • Sign driver board • Sign ID board
Power Supply	24 VDC INPUT to 3.3 VDC OUTPUT (PN# 916-PWRS-223) or 4.0 VDC OUTPUT (PN# 916-PWRS-207).
Housing	Main body extrusion is capped by two solid aluminum side panels. The all-LED board is held in place to the extrusions. The sign driver assembly, sign ID board, and power supply is secured to the sign cover. The entire assembly is enclosed with one rear panel and two individual latching elements. All sign elements are accessed by removing the rear panel.
LED Matrix	A choice of: <ul style="list-style-type: none"> • 8 x 96 • 14 x 72 • 14 x 108 • 16 x 160 (10 mm pitch)

The side sign is mounted on the vehicle's curb or street side and is routinely placed near the front door and near the top of an existing window.

4.3 Rear Sign

The rear sign is mounted in a cutout provided by the vehicle manufacturer at the rear of the vehicle on the outside. The sign consists of one 16 x 48 LED board which receives destination data from the system master controller. **Table 4-4** lists the components that are mounted on the rear sign.

The rear sign may be connected to the master controller or daisy chained through the side sign. Likewise, the rear sign reports status information to the street sign and the street sign uses its power and status LEDs to indicate status for *both* the side sign and the rear sign.

Two optional rear sign features are available:

ADA option	Displays a handicap loading symbol that is activated whenever the wheel chair access ramp is deployed.
Stop option	Displays 'STOP' whenever the vehicle brake pedal is pushed/

The ADA option is compliant with guidelines established by the Americans with Disabilities Act. The displayed symbol flashes at a defined interval while the wheel chair ramp is in use. The flashing feature is deactivated when the wheel chair ramp returns to its original position. When the wheel chair is stowed, the rear sign resumes normal route number display activity.

Table 4-4. Rear Sign Components

Component	Description
Sign Components	16 x 48 LED board powered by 24 VDC.
Power Supply	3.3 VDC (Integrated into the 16 x 48 PCB).
Housing	Hybrid rear sign - aluminum housing, standard rear sign - extruded polycarbonate housing with a top cover. The PCB is accessed by removing the top sign cover.
LED Matrix	16 x 48

4.4 Dash Sign

The dash sign is used to display run, route, or block numbers. A run or block number is used for supervisory purposes and is used internally by the transit agency. When the dash sign is used to display a run or block number, the operator types the run or block number from the operator control unit keypad using the Route key. Then he or she selects option #2 and types the number using the keypad. When the sign is used to display route number information, the route number information is stored in the sign system customer database. The route number will be display the same way the route number is displayed on the front sign and side sign. When the operator specifies a destination from the operator control unit, the route number associated with the destination appears on the dash sign.

Table 4-5 lists the components mounted on the dash sign.

Table 4-5. Dash Sign Components

Installation Location	Installed inside the vehicle on the vehicle dash.
Sign Components	LED board (14 x 40)
Power Supply	3.3 VDC power supply (integrated on the 14 x 40 PCB).
Housing	Main body extrusion capped by two solid aluminum side panels. The all-LED board is held in place to the extrusions. The entire assembly is enclosed with one rear panel and individual latching elements. All sign elements are accessed by removing the rear panel.
LED Matrix	14 x 40

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SECTION 5

SYSTEM POWER REQUIREMENTS

The Smart Series II sign system requires two independent sign connection 24V 10A circuits for use in providing power to the front sign and the street, dash, and rear signs. All sign connections are located on the front sign main controller which is available on the back of the front sign. Power is supplied to the signs and OCU by the bus through a standard 6-pin Packard Weatherpack connector.

- | | |
|----------------------|---|
| Power Input 1 | Provides 24 VDC power to the front sign and the OCU (10A maximum) |
| Power Input 2 | Provides 24 VDC power to the street, dash, and rear signs (10A maximum) |

A standard ATC removable fuse and LED indicator are located next to each connector. The fuse and LED indicator pair makes it easy to problem solve and replace fuses.

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SECTION 6

OPERATION AND MAINTENANCE

The Smart Series II sign system components do not require any routine maintenance in the field other than updating data and a regular visual functional inspection. This section describes how to perform basic sign system operations maintenance tasks and upload destination data to the sign system.

Access to the sign system is through the OCU. The OCU is password-protected and two different passwords are used. Each password is used with specific functionality and the passwords are not interchangeable. Both passwords are embedded in the OCU system software and cannot be changed. Luminator TwinVision provides the passwords to the agency at the time the sign system is installed. **Figure 6-1** illustrates the OCU front panel.



Figure 6-1. Slimline Operator Control Unit (SL-OCU)

6.1 Routine Maintenance Tasks

Perform the following tasks to as required to keep the sign system functioning normally.

Task	Typed Input	Menu Options that Appear	Option Description
Update stored sign data.	MENU, 2 5 8 0, ENTER	1: Update Sign Data. 2: Clear Folder Name.	Insert the USB drive into the OCU USB drive. Press 1. Loads new data info to the sign.
Clear a data folder name	MENU, 2 5 8 0, ENTER	1: Update Sign Data. 2: Clear Folder Name.	Press 2. Clears the last folder name loaded into the sign system.
Reconfigure the sign system	MENU, 8 8 6 2, ENTER	1: Reconfigure Signs. 2: Clear Sign Data. 3: Firmware Rev. (Displays the current firmware revision). 4: Sign Data Rev. 5: Config Rev.	Press 1. System reconfigures based on which signs report back to the system master controller as compared to the installed data base.
Clear installed sign data	MENU, 8 8 6 2, ENTER	1: Reconfigure Signs. 2: Clear Sign Data. 3: Firmware Rev. 4: Sign Data Rev. 5: Config Rev.	Press 2. Clears the route data that is programmed into the system master controller.
Display current firmware version	MENU, 8 8 6 2, ENTER	1: Reconfigure Signs. 2: Clear Sign Data. 3: Firmware Rev. 4: Sign Data Rev. 5: Config Rev.	Press 3. Displays the current firmware version of the system master controller, sign drivers and OCU.
Display sign data revision	MENU, 8 8 6 2, ENTER	1: Reconfigure Signs.	Press 4. Displays sign data revision if the

Task	Typed Input	Menu Options that Appear	Option Description
		2: Clear Sign Data. 3: Firmware Rev. 4: Sign Data Rev. 5: Config Rev.	revision has been included in the data set. If the data set does not include the revision number, this function does not return a value and the display becomes blank.
Display the configuration table revision	MENU, 8 8 6 2, ENTER	1: Reconfigure Signs. 2: Clear Sign Data. 3: Firmware Rev. 4: Sign Data Rev. 5: Config Rev.	Press 5. Displays sign system configuration name and version. If the transit agency does not use a revision number, only the name appears.

6.2 Uploading Destination Data to the Sign System

Any time route, destination, and Public Relations (PR) message data changes are made to the sign database; the data must be updated on the sign system. The destination data must be copied onto a Universal Serial Bus (USB) flash drive for use in loading the destination data into the sign system. The OCU provides a USB port for this purpose. After the data is copied to the system master controller, store the USB flash drive in its protective cover in a secure and convenient location.



Note: It is not necessary for the USB flash drive to be inserted in the OCU during normal sign system operation. In fact, it is advisable to remove the flash drive to protect the flash drive and the OCU from possible damage. Store the flash drive in a secure and convenient location for future use.

Perform the following steps to upload destination data from the OCU to the system master controller:

1. Power up the sign system.
2. Insert the USB flash drive into the USB port on the OCU. Make sure that the flash drive is properly seated.
3. Press MENU.
4. Enter this access code: 2, 5, 8, 0 and press ENTER. Command options appear.
5. Select 1, Update Sign Data.
6. Select or confirm the “.sda” file to be loaded. Press 2 to move to the next “.sda” file if more than one file is loaded on the USB key.
7. Press 1 to load the selected “.sda” file. The update process begins. Small dashes appear on the OCU screen during the upload process and will no longer appear when upload is complete.
8. When the upload is completed, the sign system performs a self-test, initializes, and then prompts for a destination address. At this point, the system route data base has been fully updated and normal sign system use can resume.
9. Remove the USB key, put it back in its protective cover, and store it securely.

6.3 Display Destination and Other Messages

Perform the following tasks to manually select a destination sign address and display messages and route numbers.

Table 6-1 Manually Select Sign Addresses and Display Messages and Route Numbers

Task	Description	Steps
Display Destination A.	Displays route selected as Destination A.	Press the Dest. A button. Enter the destination code. Press Enter. The specified location is displayed.
Display Destination B.	Displays route selected as Destination B.	Press the Dest. B button. Enter the destination code. Press Enter. The specified location is displayed.
Select a Public Relations (PR) relations message to display.	Selects a PR message to display (which alternates with destination).	Press the P/R button. Type a 1- to 3-digit message number or type 0 to delete the message. Press Enter.

Task	Description	Steps
Select the route number sign. (Used for "coded/codiert" only)	Sets the number assigned to a route.	Press the Route button. Select option 1. Type the route number. Press Enter.
Select a run number or block number	Sets the assigned number as a run.	Press the Route button. Select option 2. Type the run number. Press Enter.



Note: Route # option is only available to properties that use "coded/codiert" function. Route numbers are not included in the route data listing and must be entered manually from the OCU keyboard.

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SECTION 7 TROUBLESHOOTING

This section provides troubleshooting information. Which task(s) you perform depends on the system's symptoms. Refer to this section whenever a sign appears to be functioning unusually. Browse the symptoms until you find the applicable symptom description. Review the possible causes and perform one or more of the recommended corrective actions. If you do not see symptoms that apply, contact Luminator TwinVision for further assistance.



Important: Before removing or replacing parts, ensure that sign system power is off.

7.1 Operator Control Unit

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION(S)
No OCU display indication, no response to keypad.	No power to OCU. OCU defective.	Check cable connections from front sign to OCU (J3). Repair or replace cable as needed. Check OCU power fuse LED at front sign OCU connection (J3). Green LED lit = fuse OK. Replace fuse (F1) if LED is red or not lit. Check power to front sign (J7) (see Table 4-2). Replace OCU.
OCU display and keypad OK, but system will not update from USB key.	Defective USB key. OCU defective.	Replace USB key and re-try. Replace OCU.
Display OK, but keypad is inoperative	Damaged keypad (OCU defective).	Replace OCU.

7.2 Front Sign

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION(S)
Nothing is displayed on the Front sign	<p>Invalid destination entry.</p> <p>No power to front sign.</p> <p>Bad LED display power supply.</p> <p>Internal cable disconnected.</p> <p>Defective Master Controller.</p>	<p>Enter valid entry</p> <p>Check cable connections to front sign from vehicle power (J7).</p> <p>Check main power LED, adjacent to Power Connector (J4). Green LED lit = fuse OK. Replace fuse (F5) if LED is red or not lit.</p> <p>Open sign and check fuse on LED display power supply module, replace if blown.</p> <p>Replace as necessary.</p> <p>Check internal cables and re-seat as necessary.</p>
OCU displays "Front Sign Not Found" when system is first powered up	<p>Defective Master panel.</p> <p>Defective OCU.</p>	<p>Check J7 fuse.</p> <p>Check and re-seat internal cables.</p> <p>Replace OCU.</p> <p>Replace Master Panel.</p>
OCU displays "No Data Found for Front Sign"	There is no destination data loaded for this sign type.	Load destination data from USB key, using the port on the OCU.
Sign powers up (LED-test displayed), but does not display the route selected on the OCU keypad	No data loaded in system for this sign type.	<p>Load destination data from USB key, using the port on the OCU.</p> <p>Replace Master Controller.</p>
Sign display is scrambled	<p>Ribbon cables not seated.</p> <p>Ribbon cable (s) defective.</p> <p>Ribbon cables swapped.</p> <p>Bad transition board.</p> <p>Bad Display Board.</p>	<p>Open sign, inspect and re-seat ribbon cables from LED panels to transition board.</p> <p>Replace LED panel to transition board ribbon cable(s).</p> <p>Replace transition board.</p> <p>Inspect and re-connect ribbon cables.</p> <p>Replace display board.</p>

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION(S)
Sign intensity does not change with ambient lighting (stays dim)	<p>Ambient light sensor obstructed (blocked).</p> <p>First LED board does not have ambient light sensor installed).</p>	<p>Check to ensure the ambient light sensor hole (in front of sign) is not blocked or covered).</p> <p>If the LED board is replaced, make sure the first LED board has the ambient light sensor installed.</p>
Sign display very dim and/or only red color showing)	<p>Low vehicle voltage.</p> <p>Bad or weak LED display power supply.</p>	<p>Check vehicle power, supplied to sign system. (24 VDC is correct.)</p> <p>Replace the LED display power supply.</p>
Blocks of sign are blank (not displaying data)	<p>Missing or loose power jumper or power supply to LED board cables.</p> <p>LED board defective.</p>	<p>Check the power jumper wires between LED panels. Replace or re-seat as necessary.</p> <p>Check the ribbon cable connection between LED panels.</p> <p>Replace the LED board(s).</p>
Emergency Alarm (EA) does not operate	<p>No EA feature programmed in destination data.</p> <p>No power to EA signal.</p>	<p>Check programming to ensure the EA feature is programmed into the destination data base. Update destination data via USB key, as necessary.</p> <p>Check power (5 to 30 VDC) to the EA signal pair on the main power connector (J4). Both pins must be connected as this is an isolated circuit (not common ground).</p> <p>Verify that the EA status LED (on back of head sign) illuminates when EA button is pressed.</p>

7.3 Side Sign (Curb or Street Sign)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION(S)
No sign display	<p>No power to side sign.</p> <p>Blown fuse (F3) on front sign Master panel.</p> <p>Defective connector or sign circuit on primary board.</p> <p>Blown fuse in sign power supply.</p> <p>Blown fuse on sign driver board.</p> <p>Internal cable disconnected.</p>	<p>Check the cable connections to side sign from head sign.</p> <p>Check the power LED (located on the Master panel and) adjacent to sign connector. Green LED lit means that the fuse is OK. Red LED means that the fuse e is not functioning. Replace fuse (F3) if LED is red or not lit.</p> <p>Move sign cable to CURB or DASH connector and retry.</p> <p>Replace primary board.</p> <p>Open sign and check fuse on power supply module, replace if blown.</p> <p>Open sign and check fuse on sign driver board, replace as necessary.</p> <p>Check internal cables, re-seat as necessary.</p>
OCU displays “Side Sign Not Found” when system the is first powered up	No power, blown fuses, cables disconnected.	Follow corrective actions above, for “No Sign Display.”
OCU displays “No Data Found for Side sign”	There is no destination data loaded in the system for this sign type.	Load destination data from USB key, using the USB port on the OCU.
Sign powers up (lamp test displayed), but does not display the route selected on the OCU keypad	No data has been loaded in the system for this sign type.	Load destination data from USB key, using the USB port on the OCU.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION(S)
Sign display is scrambled	<p>Ribbon cables not seated.</p> <p>Ribbon cable(s) defective.</p> <p>Ribbon cables swapped.</p> <p>Bad display board(s).</p>	<p>Open the sign and inspect or re-seat ribbon cable from the LED panel to the JP1 connector on the sign driver board.</p> <p>Replace the LED panel to sign driver ribbon cable(s).</p> <p>Inspect and re-connect ribbon cables.</p> <p>Replace display board(s).</p>
Sign intensity does not change with ambient lighting (stays dim)	<p>Ribbon cable may be plugged into wrong connector on the sign driver board.</p> <p>Light sensor may be obstructed.</p> <p>The first LED board has no light sensor.</p>	<p>Inspect and re-connect the ribbon cable between LED panels and the JP1 connector on sign driver board.</p> <p>Check to ensure the ambient light sensor hole (in front of sign) is not blocked, covered or obstructed in any way, including dirt.</p> <p>If the LED board is replaced, make sure the first LED board has the ambient light sensor installed.</p>
Sign display is very dim	<p>Low vehicle voltage.</p> <p>Bad or weak LED display power supply.</p>	<p>Check vehicle power, supplied to sign system.</p> <p>Replace LED display power supply.</p>
Blocks of sign are blank (not displaying data)	<p>Missing power jumper or power supply to LED board cables.</p> <p>Missing or defective ribbon cable jumpers between LED panels.</p> <p>LED board is defective.</p>	<p>Check the power jumper wires between LED panels. Replace or re-seat as necessary.</p> <p>Check ribbon cable connection between LED panels.</p> <p>Replace LED board.</p>

7.4 Rear and Dash Signs

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION(S)
No sign display	<p>No power to the rear sign.</p> <p>Blown fuse (F3) on front sign Master panel.</p> <p>Defective connector or sign circuit on the primary board (first light board).</p>	<p>Check cable connections to rear sign from head sign. (May daisy chain from side sign.)</p> <p>Check power LED (on Master panel), adjacent to sign connector. Green LED lit = fuse OK. Replace fuse (F3) if LED is red or not lit.</p> <p>Move sign cable to CURB or DASH connector and retry.</p> <p>Replace Master Panel.</p> <p>Replace display board.</p>
OCU displays "Rear Sign/Dash Sign Not Found" when system is first powered up	No power, blown fuses, cables disconnected.	Follow corrective actions for "No Sign Display."
OCU displays "No Data Found for Dash sign"	There is no destination data loaded for this sign type.	Load destination data from the USB key, using the USB port on the OCU.
Sign powers up (LED-test displays), but the sign does not display the route selected on the OCU keypad	<p>No Rear data loaded in system for this sign type.</p> <p>For dash sign, No run # entered on OCU.</p>	<p>Load destination data from USB key, using the USB port on the OCU.</p> <p>Enter the run number on the OCU.</p> <p>Replace the display board.</p>
Sign display is scrambled	Bad display board(s).	Replace display board(s).
Sign intensity does not change with ambient lighting (stays dim)	<p>Light sensor obstructed.</p> <p>Defective display board.</p>	<p>Check to ensure the ambient light sensor is clear.</p> <p>Replace display board.</p>
Sign display is very dim	<p>Low vehicle voltage.</p> <p>Bad or weak LED display.</p>	<p>Check vehicle power, supplied to sign system.</p> <p>Replace LED display.</p>
Blocks of sign are blank (not displaying data)	LED board defective.	Replace LED board.

SECTION 8

SYSTEM TEST PROCEDURES

After the sign system is installed or after an individual sign or component has been modified or replaced, the technician should perform a series of component-level and end-to-end tests to confirm that the sign system is operating properly. This section describes the test procedures used to test individual system components and to perform end-to-end sign system testing. Luminator TwinVision recommends that the OCU be tested as part of component and system testing and that the OCU be tested first.

8.1 Operator Control Unit (OCU) Test

Perform the following test to confirm that the OCU is fully operational:

1. Apply power to the sign system by turning on the "Master Run Switch". The OCU should illuminate and run through its boot up procedure.
2. When the test is completed, the OCU VFD displays "READY FOR SELECTION" or displays the previous destination. The OCU is in operation.

8.2 Sign Tests

Sign tests are performed by using the OCU to initiate a test pattern that confirms that the signs are operational and able to display messages properly. The test pattern initiates the displaying of test patterns on each sign in the sign system. During the test, a series of LED lighting patterns that light the entire sign LED grid appear on each sign. The test pattern also displays a series of horizontal and vertical line test patterns, and finally displays the customer-specified property or location name.

Figure 8-1 illustrates what is displayed on the signs as the sign system executes the system test. In this example the sign system has been programmed to display a location name.

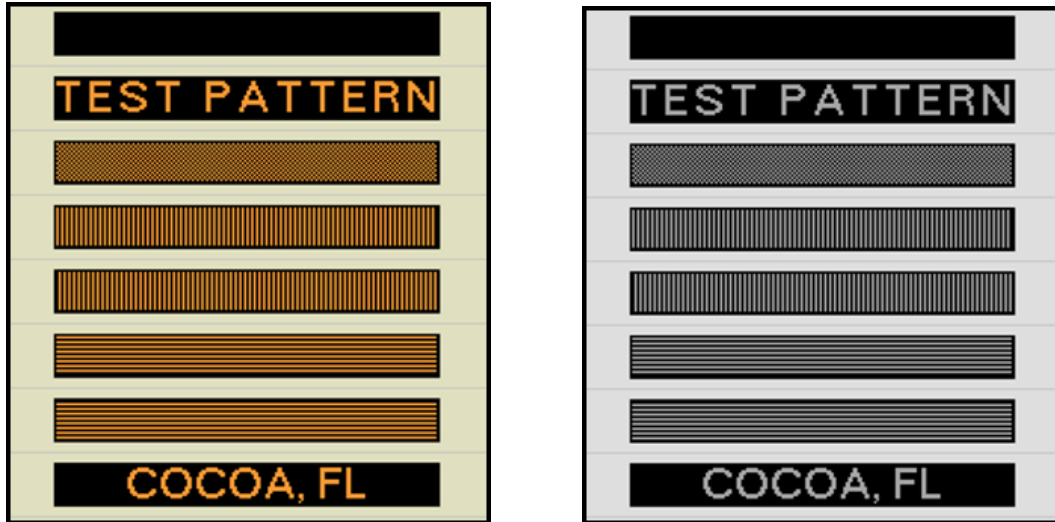


Figure 8-1. Sample Sign System Test Pattern – Amber and Silver

Perform these steps to test the signs in the sign system:

1. Press the DEST A key.
2. Press 2 or 9 9 9 (or 9 9 9 9 if this sequence is used at your agency) and press Enter. The sign test begins.

Within moments, a test pattern will be displayed on each system sign. Initially, "Test Pattern" appears on each sign. Then a series of horizontal and vertical test patterns appear. Finally the customer-specified message appears on each sign.

8.3 Destination Change Test

Perform the following steps to test destination message changing.

1. Select a destination code from the Transit Authority listing.
2. Press DEST A or DEST B and type the new destination code.
3. Press Enter. Within 10 seconds, the new destination should be displayed on all signs.
4. Confirm that all signs are displaying the correct information.

8.4 Emergency Alarm Test

The emergency alarm feature (provided by the agency) is connected to the Luminator TwinVision Smart Series II front sign and is tested by pressing the vehicle emergency switch. When the vehicle emergency switch is pressed, each vehicle sign displays a customer-specific, pre-programmed emergency message.

The emergency alarm can be activated and deactivated in two ways:

Latched activation	Locks the emergency alarm into emergency mode. The alarm is released by recycling the system power.
Momentary Switched	The use of an emergency alarm button activates and deactivates the emergency alarm.

How the emergency message is activated and deactivated is defined in the system master controller firmware. The emergency overrides any active destination message that is displayed on the sign. When the emergency alarm is deactivated, the OCU resumes displaying the destination that was displayed at the time of emergency alarm activation.



Important: Some agencies' emergency alarms are initiated by the on-board Vehicle Location Unit (VLU). How the alarms are initiated and therefore tested may be different from the process described herein. Refer to the information provided about the VLU for more information about testing the emergency alarm message when the emergency alarm is initiated by the on-board VLU.

8.5 ADA Feature Test

Test the ADA feature by pressing the wheel chair activation switch. The lift should activate and the ADA message should display. If the message does not appear, troubleshoot the rear sign.

8.6 'STOP' Display Test

Test that the 'STOP' message appears by pressing/stepping on the vehicle brake pedal until the brake light engages. The 'STOP' message should immediately appear sign. If the message does not appear, troubleshoot the rear sign.

8.7 Retrofitting with Smart Series II Signs

Most vehicles can be retrofitted with Smart Series II signs. The retrofitting process may require Luminator TwinVision Customer Service to do the following:

- Perform a site survey to review basic vehicle features and attributes.
- Work with you to assess your signage requirements.
- Measure your vehicle.
- Determine your message data requirements. Define your sign system operating preferences (such as emergency alarm preference).
- Assist you with ordering the signs of your choice.
- Assist you in planning for the bus retrofit.

Call Luminator TwinVision Customer Support and inform Customer Support that you would like to discuss retrofitting your vehicles with Smart Series II signs. Luminator TwinVision Customer Support will assist you every step of the way.

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SECTION 9

HOW TO RETURN EQUIPMENT

Occasionally it may be necessary to return a sign or sign component to Luminator TwinVision. How the return is processed depends on if the part is under warranty or outside of warranty coverage. Parts under warranty are replaced at no charge. Parts not under warranty can be repaired or replaced with a remanufactured or new part. The cost will vary depending on the agency's choice

Perform the following steps to return equipment to Luminator TwinVision. Be sure to provide all requested information. Contact Luminator TwinVision to discuss questions regarding returning signs and sign components.

9.1 Before Contacting Luminator TwinVision

You will need to provide Luminator TwinVision with some information prior to shipping the sign or component to Luminator TwinVision. Please have the following information available before contacting Luminator TwinVision:

- Sign serial number
- Sign or component part number
- Customer contact information including:
 - Property Name
 - Caller's name
 - Caller's phone number
 - Email address
- Description of problem including the symptoms, situation in which symptoms were experienced, and a photograph of the component to be returned (if possible and relevant).

9.2 Contact Luminator TwinVision

Customers who are returning a part that is under warranty are provided a Return Material Authorization form (RMA) which must be included with the part when the part is returned. Customers receive an RMA for signs and components that are currently under warranty. Customers wanting to return signs or components that are out of warranty are provided an RMA for a repair and a corresponding repair invoice. Shipping is not charged for parts under warranty, however; customers pay for shipping costs associated with parts that are out of warranty.

9.3 Return the Part

The steps for returning a part differ depending on if the part is under warranty. Perform the steps that meet the agency's needs.

9.3.1 Warranty Returns

Perform these steps to contact Luminator TwinVision, and arrange to return a part that is currently under warranty.

1. Call or email Luminator TwinVision to report the need to return a part. Luminator TwinVision can be reached as follows:

Phone	1 (972) 424-6511 between the hours of 8:00 and 5:00 CT (leave a voice message if after hours)
Email	yandrasko@luminatorusa.com

2. Provide the sign serial number associated with the sign. If returning a part, provide the serial number of the sign from which the component is removed.
3. Provide the part number of the failed part and a description of how the part has failed. Include a photograph if relevant or possible.

Luminator TwinVision will respond as follows:

- Ship a replacement part to the customer location.
- Include an RMA that authorizes the return.
- Provide a shipping label to use to return the part.

After you receive the RMA, securely pack the part, include the necessary information and paperwork, and ship the part to Luminator TwinVision. Luminator TwinVision will coordinate the shipping of a replacement part or the repair and return of the part as agreed.

9.3.2 Non-Warranty Parts Return and Repair

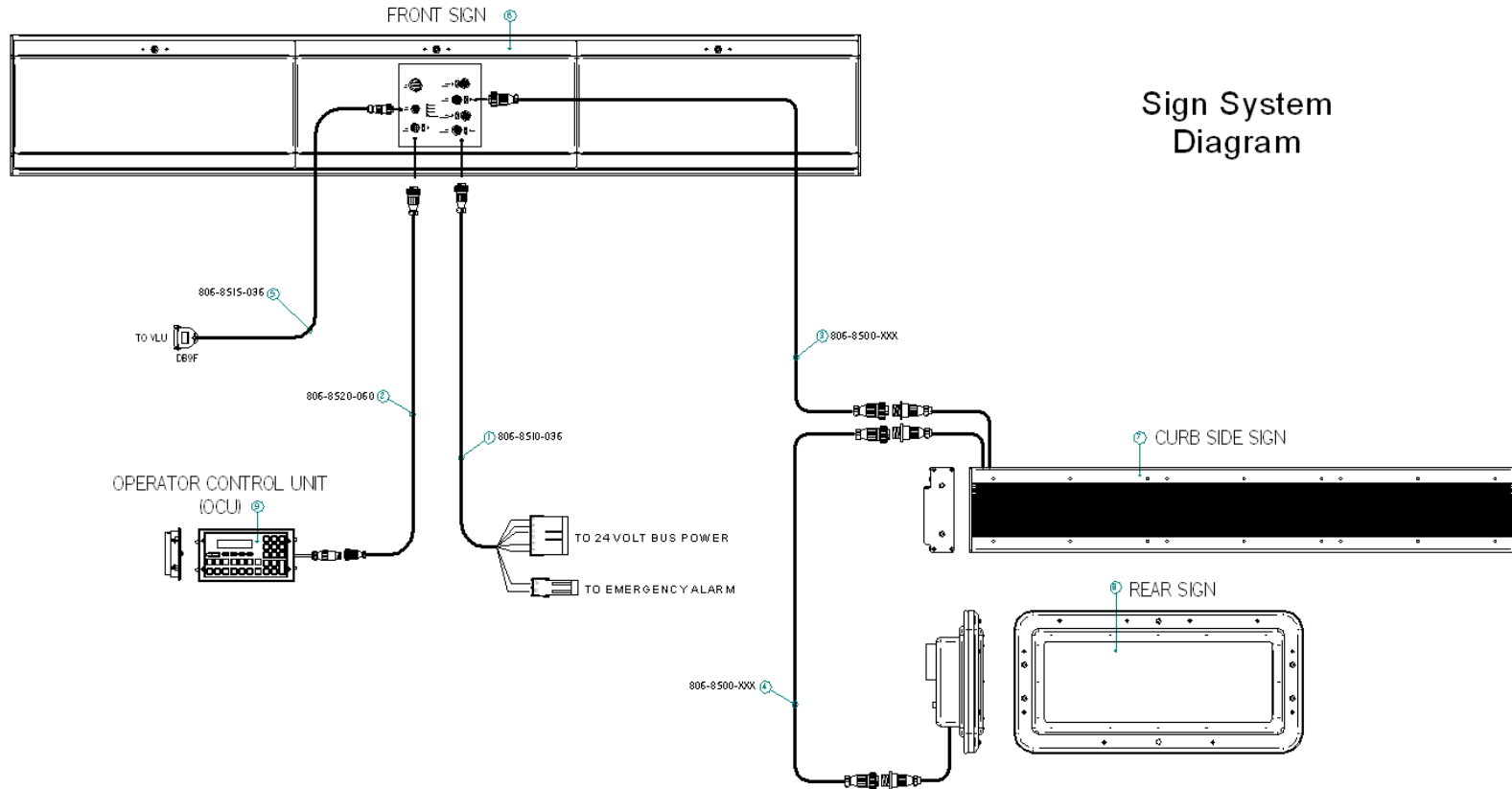
Parts that are outside of warranty can be repaired or replaced with a remanufactured part for a flat rate or the customer can purchase a new part. The process is similar to the warranty process:

- Contact Luminator TwinVision as described in this section.
- Determine if you will replace the part with a remanufactured part or if you will purchase a new part.
- Ship the malfunctioning part to Luminator TwinVision as directed.

Luminator TwinVision will respond as follows:

- If a new part is purchased the part will be shipped to the customers, or
- If a part needs repair, an RMA number for parts to be repaired will be provided.

SECTION 10 SYSTEM DIAGRAM



Sign System
Diagram

Figure 10-1. Sign System Diagram

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SECTION 11

ILLUSTRATED PARTS CATALOGS

11.1 General

This parts catalog provides replacement parts information by indexed figure and parts list table. Some replacement parts may not be shown in the figure, but may be listed in the parts list table and indicated by a (-) preceding the index number. Parts that cannot be replaced by users are not listed.

11.2 How to Use the Parts Catalog

The parts catalog details the replaceable parts contained in signs and some components used with them, as supplied by Luminator TwinVision.

Each parts list begins with a figure illustrating respective item(s) listed in an associated table. Each item shown in the figure is indexed with a number that appears in the Fig. & Index # column of the parts list table.

Areas within a figure shown elsewhere in more detail are designated by boundaries and letters; parts indexed in the detailed area are also listed in the parts list table Fig. & Index # column.

In some cases, one figure is used to illustrate content of several similar assemblies. Such assemblies vary in the quantity used or in the part number of certain items. In such cases, there is more than one quantity column. In such cases, each quantity-column applies to one assembly part number, listed at the top of the column. The quantity of items used in each assembly part number is then listed in the column for that assembly part number. When the same quantity of an item is used in more than one assembly part number, the quantity is entered once across those columns to make differences and commonality more obvious.

Each parts list table contains the following columns:

FIG. & INDEX #	This column begins with the figure number and assembly number to which that particular parts table is applicable. It contains the index numbers shown in the associated figure.
PART #	This column provides the Luminator TwinVision part number.
QTY/UM	The quantity listed for each component/assembly is the quantity used for that part, not the total number used in the top assembly. The UM (Unit of Measure) column defines what the quantity

column means, such as **Each** or **Length in Inches**. When no definite quantity can be shown, the abbreviation "**AR**" is used to signify "as required".

The quantities of parts used in different versions of the same basic assembly shown in one figure are defined in separate columns; the top of each column shows the last part of the basic part number. When different versions of an assembly use the same quantity of a part, that quantity is listed in a cell that spans the columns. (Refer to actual parts lists, such as the one on page 11-7; this is more easily seen than described.) Thus, the differences between similar models are made obvious.

DESCRIPTION

This column gives the official nomenclature of the part and shows the assembly relationship of parts with an indent system of numbered columns.

11.3 Front Sign



These graphics depict a typical Front Sign. The different front signs may vary slightly from these graphic presentations.

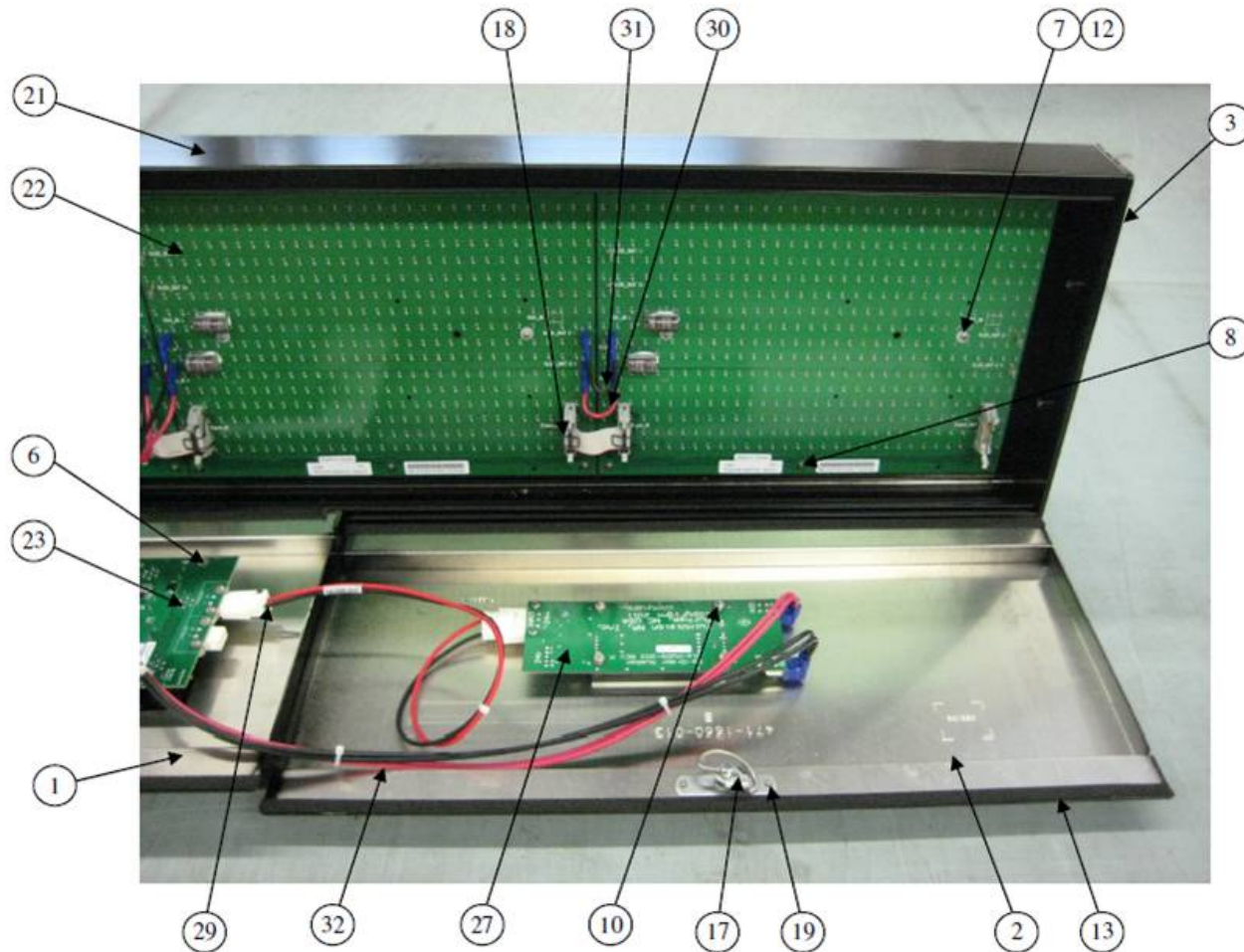


Figure 11-1. Typical Front Sign, View from Right Side

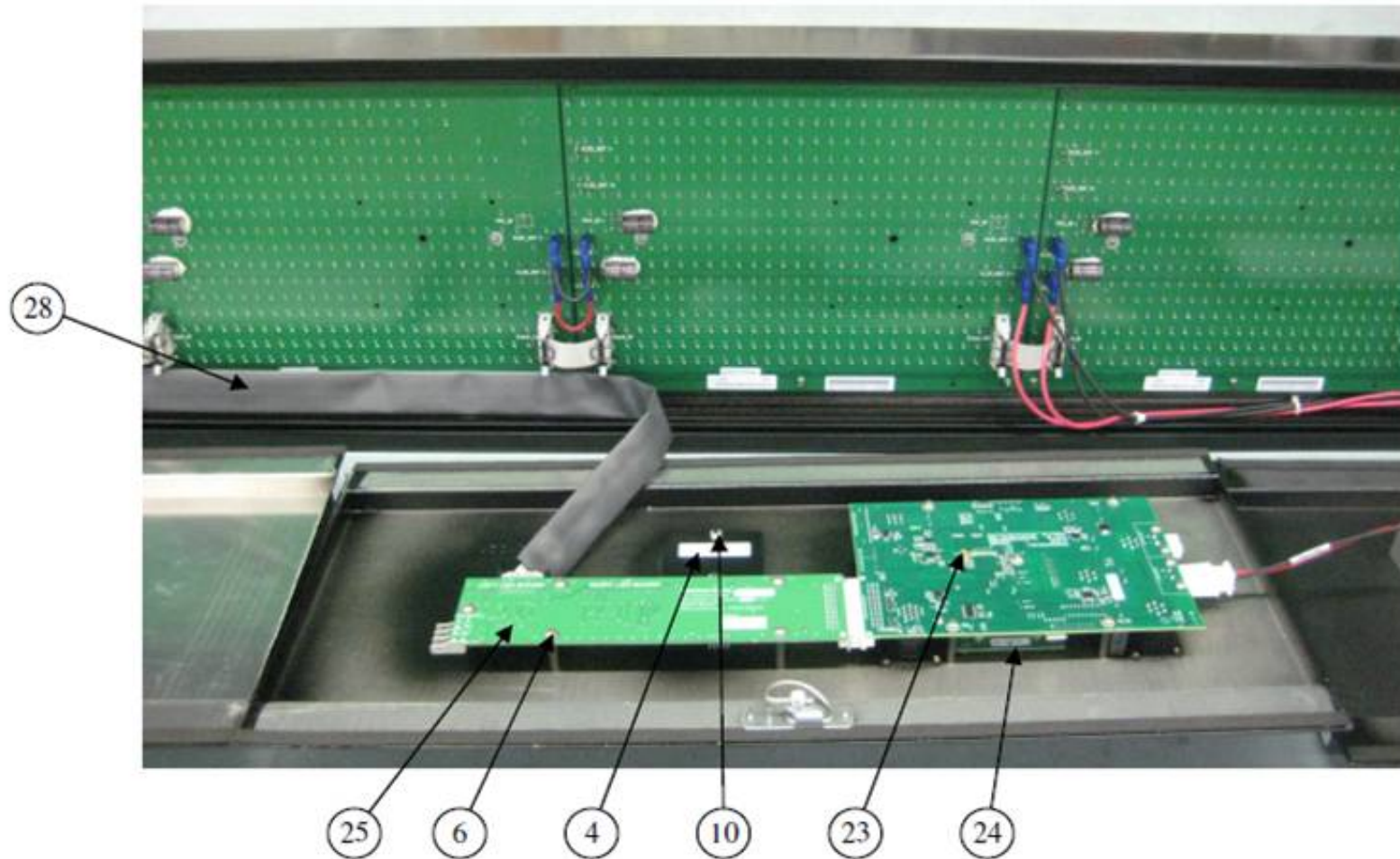


Figure 11-2. Typical Front Sign, View from Middle



Figure 11-3. Typical Front Sign, View from Left Side



Figure 11-4. Typical Front Sign, Back View

Bill of Materials

906-1660-510 and 920 – 16 x 160-10 mm Front Signs

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY		UM	DESCRIPTION
		510	920		
		Amber	Silver		
Fig 11-1 thru 11-4	906-1660-xxx	REF	REF		16 x 160-10 mm, Front Signs
1	471-1600-002	1	1	EA	Rear Cover for 16 x 160-10 mm
2	471-1660-015	1	1	EA	Rear Cover, Smart Sign Series
3	476-1600-010	2	2	EA	End Plate, Left/Right, 16 x 160
4	476-2143-002	1	1	EA	Plate, Blank, USB/ETHERNET, Smart Series
5	493-0002-440	14	14	EA	Cap Screw, #4-40 x 1/4", Black Oxide
6	493-0004-632	10	10	EA	Machine Screw, #6-32 x 5/16", Pan Head Phillips
7	N/A	--	--	--	--
8	493-0010-003	24	24	EA	Machine Screw, M3 x 10 mm, Pan Head, Phillips
9*	493-0016-808	8	8	EA	Self-Tapping Screw, #8 x 1", Flat Head, Phillips
10	494-0000-632	10	10	EA	Locknut, #6-32, Stainless Steel w/Nylon Insert
11*	494-0632-188	4	4	EA	Spacer, Nylon, for #6 Screw
12	494-0008-001	5	5	EA	Washer, Flat, #8, Nylon
13	495-0106-PSA	35.0	35.0	LI	Strip, Adhesive Back, 1/16" x 3/8" PSA
14	495-1660-002	1	1	EA	Cap for CPC Connector
15*	495-4100-001	2	2	EA	Cable Tie, 4", Black Nylon
16*	495-4100-008	1	1	EA	Cable Tie, 8" x 0.095" x 0.045", Black
17	495-5710-811	2	2	EA	Adjustable Compression Latch
18	N/A	--	--	--	--
19	495-RVET-001	4	4	EA	Rivet, 1/8" Dia. x 1/4" Long, Stainless Steel
20	496-1006-820A	2	2	EA	Vinyl Plug
21	526-1660-010	1	1	EA	Extrusion, Finished, 16 x 160-10 mm, Front Sign
22	816-1640-010	3	--	EA	16 x 40-10 mm, All-LED Display
22	816-1640-810	--	3	EA	Light Board, 16 x 40-10 mm
23	816-2141-000	1	1	EA	Assembly, PCB, Master, Main Ver. 2
24	816-2142-000	1	1	EA	Assembly, PCB, LED Board, Main Ver. 2
25	816-2144-410	1	1	EA	PCB Assembly, Transition Board

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY		UM	DESCRIPTION
		510	920		
		Amber	Silver		
26	916-1640-010	1	--	EA	16 x 40-10 mm, All-LED Display
26	916-1640-810	--	1		16 x 40-10 mm, Silver, LED Board
27	916-PWRS-203	1	--	EA	Assembly, Power Supply, 3.3V, 50AMP
27	916-PWRS-207	--	1	PH	Assembly, Power Supply, RO, w/o ACs
28	946-8500-207	1	1	EA	Cable Assembly, Controller to ID BD
29	946-8500-206	1	1	EA	Cable Assembly, Side, PWR/Controller
30	946-ALED-400	2	2	EA	Power Cable, Red, Display to Display
31	946-ALED-401	2	2	EA	Power Cable, Black, Display to Display
32	946-ALED-423	1	1	EA	Power Cable, +4.0 VDC, Power Supply Output
33*	816-2200-044	1	1	EA	PCB, Sign Driver 485, A20/A20
34*	816-2200-204	1	1	EA	Sign ID Board, Smart Series Sign
35*	946-8500-200	1	1	EA	Cable Assembly, Signal, Front Sign
36*	493-0002-440	14	14	EA	Cap Screw, #4-40 x 1/4", Black
37*	700-0000-001	6	6	LI	3M VHB 4952 Tape, 1/2"
38*	495-4378-008	2	2	EA	Cable Tie, Anchor Mount, #8
39*	946-ALED-106	1	1	EA	Signal Cable, 20-Pos. Ribbon

* SHOWN / HIDDEN BY OTHER PARTS DENOTES ITEM NOT SHOWN

Note: Bracket part numbers are based on bus type and model – Contact Customer Service for correct part numbers.

906-1660-413 and 910 – 16 x 160-13 mm Front Signs

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY		UM	DESCRIPTION
		413	910		
		Amber	Silver		
Fig 11-1 thru 11-4	906-1660-xxx	REF	REF		16 x 160-13 mm, Front Signs
1	471-1660-001	1	1	EA	Rear Cover for 16 x 160-13 mm Front Sign
2	471-1660-013	1	1	EA	Rear Cover, Power Supply
3	476-1600-005	2	2	EA	End Plate, Left/Right, 16 x 160-13 mm, Front Sign
4	476-2143-002			EA	Plate, Blank, USB/ETHERNET, Smart Series
5	493-0002-440	14	14	EA	Cap Screw, #4-40 x 1/4", Black Oxide
6	493-0004-632	11	11	EA	Machine Screw, #6-32 x 5/16", Pan Head, Phillips
7	493-0008-440	10	10	EA	BT/Type 25 Screw, #4-40 x 7/16", Pan Head, Phillips
8	493-0010-003	30	30	EA	Machine Screw, M3 x 10 mm, Pan Head, Phillips
9*	493-0016-808	8	8	EA	Self-Tapping Screw, # 8 x 1", Flat Head, Phillips
10	494-0000-632	2	2	EA	Locknut, #6-32, Stainless Steel w/Nylon Insert
11*	N/A	--	--	--	--
12	494-0008-001	10	10	EA	Washer, Flat, #8, Nylon
13	495-0106-PSA	35.0	35.0	LI	Strip, Adhesive Back, 1/16" x 3/8" PSA
14	495-1660-002	1	1	EA	Cap for CPC Connector
15*	495-4100-001	4	4	EA	Cable Tie, 4", Black Nylon
16*	495-4100-008	1	1	EA	Cable Tie, 8" x 0.095" x 0.045", Black
17	495-5710-811	1	1	EA	Adjustable Compression Latch
18	495-CLIP-16WSR	9	9	EA	Ribbon Cable Connector Clip
19	495-RVET-001	2	2	EA	Rivet, 1/8" Dia. x 1/4" Long, Stainless Steel
20	496-1006-820A	4	2	EA	Vinyl Plug
21	526-1660-001	1	1	EA	Extrusion, Finished, 16 x 160-13 mm, Front Sign
22	816-1632-013	4	4	EA	16 x 32-13 mm, All-LED Display
23	816-2141-000	1	1	EA	Assembly, PCB, Master, Main Ver. 2
24	816-2142-000	1	1	EA	Assembly, PCB, LED Board, Main Ver. 2
25	816-2200-021	1	1	EA	PCB, Sign Driver 485, C26/A16
26	916-1632-013	1	1	EA	16 x 32-13 mm, All-LED Display
27	916-PWRS-203	1	--1	EA	Assembly, Power Supply, 3.3V, 50AMP
27	916-PWRS-207	--	1	EA	Assembly Power Supply, RO, w/o ACs

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY		UM	DESCRIPTION
		413	910		
		Amber	Silver		
28	946-8500-213	1	1	EA	Cable Assembly, Ribbon, Display
29	946-8500-207	1	1	EA	Cable Assembly, Controller to ID BD
30	946-ALED-400	3	3	EA	Power Cable, Red, Display to Display
31	946-ALED-401	3	3	EA	Power Cable, Black, Display to Display
32	946-ALED-423	1	1	EA	Power Cable, +4.0 VDC, Power Supply Output
33*	946-8500-200	1	--	EA	Cable Assembly, Signal, Front Sign
34*	946-8500-201	1	1	EA	Cable; Smart Series, Primary-to-PS
35*	471-1612-011	1	--	EA	Rear Cover, Primary & Sign Board
36*	493-1660-001	4	--	EA	Machine Screw, M8 x 25 mm

* SHOWN / HIDDEN BY OTHER PARTS DENOTES ITEM NOT SHOWN

Note: Bracket part numbers are based on bus type and model – Contact Customer Service for correct part numbers.

906-2420-410 and 910 – 24 x 200-10 mm Front Signs

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY		UM	DESCRIPTION
		410	910		
		Amber	Silver		
Fig 11-1 thru 11-4	906-2420-xxx	REF	REF		24 x 200-10 mm, Front Signs
1	471-2420-001	1	1	EA	Rear Cover, Primary & Sign Board
2	471-2420-002	1	1	EA	Rear Cover, Power Supply, Mounting
3	476-2400-001	2	2	EA	Plate, End, Right & Left, 24 x 200-10 mm, Front Sign
4	476-2143-002	1	1	EA	Plate, Blank, USB/ETHERNET, Smart Series
5	493-0002-440	14	14	EA	Cap Screw, #4-40 x 1/4", Black Oxide
6	493-0004-632	11	11	EA	Machine Screw, #6-32 x 5/16", Pan Head, Phillips
7	493-0008-440	10	10	EA	BT/Type 25 Screw, #4-40 x 7/16", Pan Head, Phillips
8	493-0010-003	30	30	EA	Machine Screw, M3 x 10 mm, Pan Head, Phillips
9*	493-0016-808	8	8	EA	Self-Tapping Screw, #8 x 1", Flat Head, Phillips
10	494-0000-632	6	6	EA	Locknut, #6-32, Stainless Steel w/Nylon Insert
11*	N/A	--	--	--	--
12	494-0008-001	10	10	EA	Washer, Flat ,#8, Nylon
13	495-0106-PSA	45.96	45.96	LI	Strip, Adhesive Back, 1/16" x 3/8" PSA
14	495-1660-002	1	1	EA	Cap for CPC Connector
15*	495-4100-001	2	2	EA	Cable Tie, 4", Black Nylon
16*	495-4100-008	2	2	EA	Cable Tie, 8" x 0.095" x 0.045", Black
17	495-5710-811	1	1	EA	Adjustable Compression Latch
18	495-CLIP-16WSR	10	10	EA	Ribbon Cable Connector Clip
19	495-RVET-001	2	2	EA	Rivet, 1/8" Dia. x 1/4" Long, Stainless Steel
20	496-1006-820A	2	2	EA	Vinyl Plug
21	526-2420-001	1	1	EA	Extrusion, Finished, 24 x 200-10 mm, Front Sign
22	N/A	--	--	--	--
23	816-2141-000	1	1	EA	Assembly, PCB, Master Main Ver. 2
24	816-2142-000	1	1	EA	Assembly, PCB LED Board, Main Ver. 2
25	N/A	--	--	--	--
26	916-2440-010	5	--	EA	24 x 40-10 mm, All-LED Display
26	916-2440-810	--	5	EA	24 x 40-10 mm, Silver LED Board,

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY		UM	DESCRIPTION
		410	910		
		Amber	Silver		
27	916-PWRS-203	1	--	EA	Assembly, Power Supply, 3.3V, 50AMP
27	916-PWRS-207	--	1	PH	Assembly Power Supply, RO, w/o ACs
28	946-8500-207	1	1	EA	Cable Assembly, Controller to ID BD
29	946-8500-202	1	1	EA	Cable Assembly, Controller to PWR 2
30	946-ALED-400	1	1	EA	Power Cable, Red, Display to Display
31	946-ALED-401	1	1	EA	Power Cable, Black, Display to Display
32	946-ALED-420	1	1	EA	Power Cable. +4.0 VDC, Power Supply Output
33*	816-2200-021	1	1	EA	PCB, Sign Driver 485, C26/A16
34*	816-2200-207	1	1	EA	Sign ID Board, Smart Series Sign
35*	946-8500-200	1	1	EA	Cable Assembly, Signal, Front Sign
36*	946-8500-213	1	1	EA	Cable Assembly, Ribbon, Controller to LED
37*	946-8500-201	1	1	EA	Cable, Smart Series, Primary-to-PS
38*	471-2420-003	1	1	EA	Cover, Rear, Mounting, Primary
39*	493-0002-440	14	14	EA	Cap Screw, #4-40 x 1/4", Black

* SHOWN / HIDDEN BY OTHER PARTS DENOTES ITEM NOT SHOWN

Note: Bracket part numbers are based on bus type and model – Contact Customer Service for correct part numbers.

986-1660-NF5 – FRONT SIGN w/BRACKETS, 16 x 160-13 mm, AMBER

ITEM	PART NUMBER	DESCRIPTION	QTY
1	906-1660-413	16 x 160-13 mm Amber, Front Sign	1
2	451-1660-162	Bracket, Bus Mounting, Curb	1
3	451-1660-163	Bracket, Bus Mounting, Street	1
4	451-1660-164	Bracket, Pivot, Curbside	1
5	451-1660-165	Bracket, Pivot, Streetside	1
6	441-1660-007	Bracket Hardware Kit	1

986-1660-NF6 – FRONT SIGN w/BRACKETS, 16 x 160-13 mm, SILVER

ITEM	PART NUMBER	DESCRIPTION	QTY
1	906-1660-910	16 x 160-13 mm, Silver, Front Sign	1
2	451-1660-162	Bracket, Bus Mounting, Curb	1
3	451-1660-163	Bracket, Bus Mounting, Street	1
4	451-1660-164	Bracket, Pivot, Curbside	1
5	451-1660-165	Bracket, Pivot, Streetside	1
6	441-1660-007	Bracket Hardware Kit	1

986-2420-NF2 – FRONT SIGN w/BRACKETS, 24 x 200-10 mm, SILVER

ITEM	PART NUMBER	DESCRIPTION	QTY
1	906-2420-910	24 x 200-10 mm, Silver, Front Sign	1
2	451-1660-164	Bracket, Pivot, Curbside	1
3	451-1660-165	Bracket, Pivot, Streetside	1
4	451-1660-168	Bracket, Bus, Mounting, Curb, Front	1
5	451-1660-169	Bracket, Bus, Mounting, Street, Front	1
6	493-1660-001	Machine Screw, M8 x 25 mm	4
7	494-0002-420	Washer, Flat, 1/4"	4
8	494-0001-420	Washer, Spring Lock, 1/4"	4
9	493-0308-420	Cap Screw, 1/4 -20 x 3/4"	4

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11.4 Side Sign



This graphic depicts a typical Side Sign. The different side signs may vary slightly from this graphic presentation.

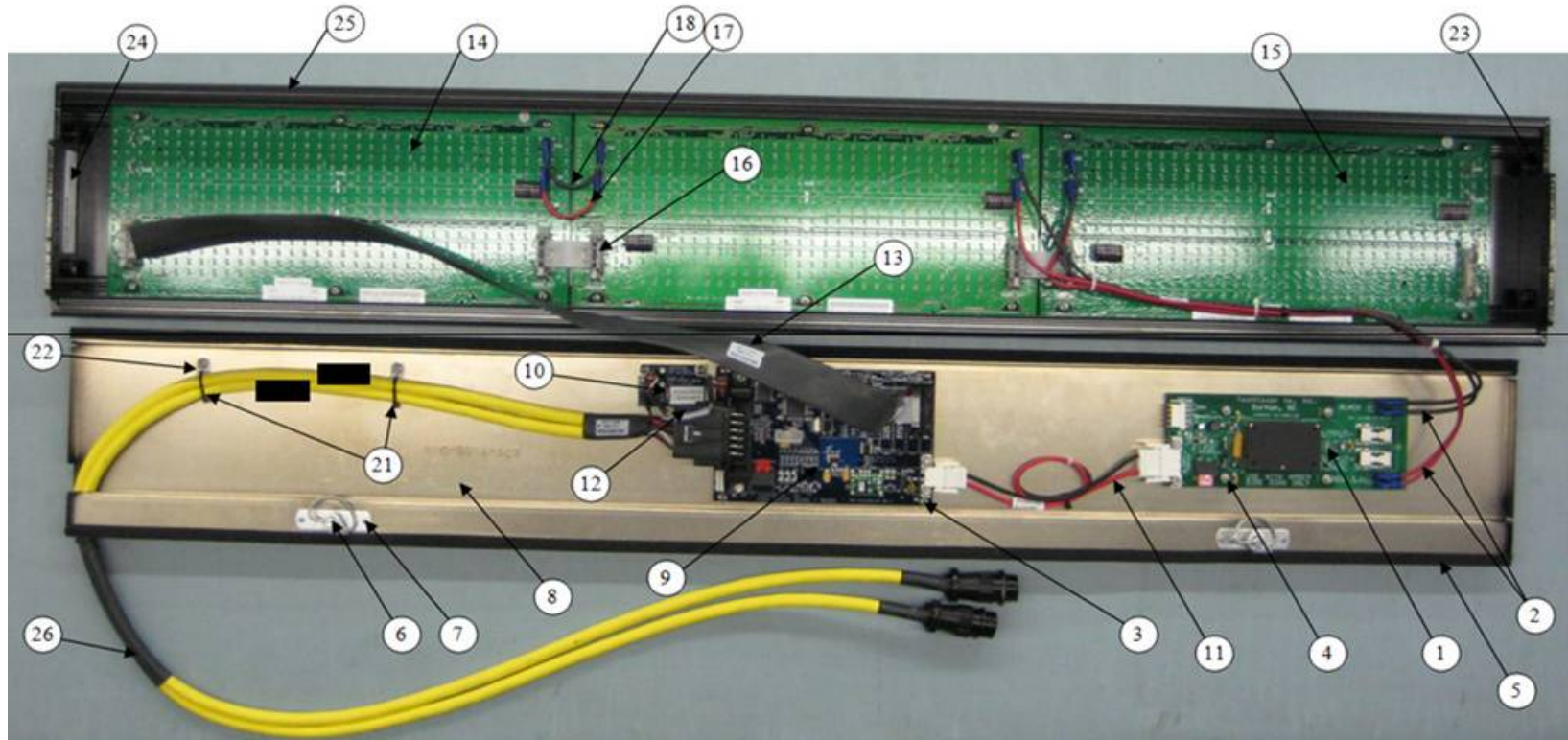


Figure 11-5. Typical Side Sign, Front View

Bill of Materials

906-0896-508, 518, 528 and 808 – 8 x 96-8 mm Side Signs

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY				UM	DESCRIPTION
		508 Amber	518 Amber	528 Amber	808 Silver		
Fig 11-5	906-0896-xxx	REF	REF	REF	REF		8 x 96-8 mm ,Side Signs
1	916-PWRS-223	1	1	1	--	EA	Assembly, Power Supply, w/o ACs
1	916-PWRS-207	--	--	--	1	EA	Assembly, Power Supply, RO, w/o ACs
2	946-ALED-420	1	1	1	1	EA	Power Cable. +3.3 VDC, Power Supply Output
3	493-0004-632	4	4	6	4	EA	Machine Screw, #6-32 x 5/16", Pan Head Phillips
4	494-0000-632	4	4	6	4	EA	Locknut, #6-32, Stainless Steel w/Nylon Insert
5	495-0106-PSA	77.0	77.0	77.0	77.0	LI	Strip, Adhesive Back, 1/16" x 3/8" PSA
6	495-5710-811	2	2	2	2	EA	Adjustable Compression Latch
7	495-RVET-001	6	6	4	6	EA	Rivet, 1/8 Dia. x 1/4" Long, Stainless Steel
8	471-0896-002	1	--	--	1	EA	Rear Cover, 8 x 96-8 mm
8	471-0896-003	--	1	--	--	EA	Rear Cover, 8 x 96-8 mm
8	471-0896-004	--	--	1	--	EA	Cover, Smart, Side Sign, CBL, XIT RT
9	816-2200-021	1	1	1	1	EA	PCB, Sign Driver 485, C26/A16
10	816-2200-200	1	1	--	1	EA	Sign ID Board, Smart Sign, 8 x 96-8 mm, Amber
10	816-2200-210	--	--	1	--	EA	Sign ID Firmware , PWA 8 x 96, Side
11	946-8500-206	1	1	1	1	EA	Cable Assembly, Side PWR/Controller
12	946-8500-207	1	1	1	1	EA	Cable Assembly, Controller to ID BD
13	946-8500-208	1	1	--	1	EA	Cable Assembly, Ribbon ,Side Sign, Controller to Light Board
14	916-0832-008	1	1	3	1	EA	8 x 32-8 mm All-LED Display
15	816-0832-008	2	2	--	2	EA	8 x 32-8 mm All-LED Display
16	495-CLIP-16WSR	5	5	5	5	EA	Ribbon Cable connector clip

Luminator TwinVision

SMART SERIES II AMBER AND SILVER OPERATIONS AND MAINTENANCE MANUAL

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY				UM	DESCRIPTION
		508	518	528	808		
		Amber	Amber	Amber	Silver		
17	946-ALED-400	1	1	1	1	EA	Power Cable, Red, Display to Display
18	946-ALED-401	1	1	1	1	EA	Power Cable, Black, Display to Display
19*	493-0010-003	18	18	18	18	EA	Machine Screw, M3 x 10 mm, Pan Head, Phillips
20*	493-0016-808	8	8	8	8	EA	Self-Tapping Screw, #8 x 1", Flat Head, Phillips
21	495-4100-001	6	6	2	6	EA	Cable Tie, 4", Black Nylon
22	495-4378-008	3	3	2	3	EA	Cable Tie, Anchor Mount, #8
23	476-1400-001	1	1	1	1	EA	End Plate, Right, 8 x 96-8 mm Side Sign
24	476-1400-002	1	1	1	1	EA	End Plate, Left, 8 x 96-8 mm, Side Sign
25	526-0896-001	1	1	1	1	EA	Extrusion, Finished, 8 x 96-8 mm, Side Sign
26	946-8500-000	1	1	1	1	EA	Cable, PWR/SGL, Smart Series Side
27*	498-0896-999	1	1	--	1	EA	Serial Number Label, 8 x 96-8 mm, Side Sign
28*	999-1660-001	2	2	--	2	EA	U-Joint Insert for Sign Box
29*	496-1006-820A	2	2	2	2	EA	Vinyl Plug
30*	980-2121-000	1	1	1	1	EA	Firmware load Sign Driver Side
31*	946-ALED-105	--	--	1	--	EA	Signal Cable ,16-Pos. Ribbon
32*	494-1408-001	--	--	4	--	EA	Washer, Flat, M8
33*	494-1408-002	--	--	4	--	EA	Washer, Lock, M8
34*	493-1408-001	--	--	4	--	EA	Metric, 18-8, SS, Hex Head Cap Screw

* SHOWN / HIDDEN BY OTHER PARTS DENOTES ITEM NOT SHOWN

Note: Bracket part numbers are based on bus type and model – Contact Customer Service for correct part numbers.

906-1472-608, 618, 808 and 818 – 14 x 72-8 mm Side Signs

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY				UM	DESCRIPTION
		608	618	808	818		
		Amber	Amber	Silver	Silver		
Fig 11-5	906-1472-xxx	REF	REF	REF	REF		14 x 72-8 mm, Side Signs
1	916-PWRS-223	1	1	--	--	EA	Assembly Power Supply, w/o ACs
1	916-PWRS-203	--	--	1	1	EA	Assembly Power Supply, RO, w/o ACs
2	946-ALED-420	1	1	1	1	EA	Power Cable. +3.3 VDC, Power Supply Output
3	493-0004-632	6	6	6	6	EA	Machine Screw, #6-32 x 5/16", Pan Head, Phillips
4	494-0000-632	6	89	6	6	EA	Locknut, #6-32, Stainless Steel w/Nylon Insert
5	495-0106-PSA	89.0	89.0	89.0	89.0	LI	Strip, Adhesive Back, 1/16" x 3/8" PSA
6	495-5710-811	2	2	2	2	EA	Adjustable Compression Latch
7	495-RVET-001	4	4	4	4	EA	Rivet, 1/8" Dia. x 1/4" Long, Stainless Steel
8	471-1472-018	--	1	--	--	EA	Rear Cover, 14 x 72-8 mm, Side
8	471-1472-019	--	--	--	1	EA	Rear Cover, 14 x 72-8 mm, Dash
9	816-2200-021	1	4	1	1	AE	PCB, Sign Driver 485, C26/A16
10	816-2200-208	1	--	--	--	EA	Sign ID Board, Smart Sign, 14 x 72-8 mm, Side Sign
10	816-2200-200	--	1	1	1	EA	Sign ID Board, Smart Sign, 14 x 72-8 mm, Side Sign
11	946-8500-206	1	1	1	1	EA	Cable Assembly, Side PWR/Controller
12	946-8500-207	1	1	1	1	EA	Cable Assembly, Controller to ID BD
13	946-8500-208	1	1	1	1	EA	Cable Assembly, Ribbon, Side Sign, Controller to Light Board
14	916-1436-008	1	1	--	--	EA	14 x 36-8 mm, All-LED Display
14	816-1436-008	1	1	--	--	EA	14 x 36-8 mm, All-LED Display
15	495-CLIP-16WSR	3	3	3	3	EA	Ribbon Cable connector clip
16	N/A	--	--	--	--	--	--
17	N/A	--	--	--	--	--	--
18	493-0010-003	12	12	12	12	EA	Machine Screw, M3 x 10 mm, Pan Head, Phillips

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FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY				UM	DESCRIPTION
		608	618	808	818		
		Amber	Amber	Silver	Silver		
19*	493-0016-808	8	8	8	8	EA	Self-Tapping Screw, #8 x 1", Flat Head, Phillips
20*	495-4100-001	6	6	6	6	EA	Cable Tie. 4", Black Nylon
21	N/A	--	--	--	--	--	--
22	476-1400-001	1	1	1	1	EA	End Plate, Right, 14 x 72-8 mm, Side Sign
23	476-1400-002	1	1	1	1	EA	End Plate, Left, 14 x 72-8 mm, Side Sign
24	526-1472-001	1	1	1	1	EA	Extrusion, Finished, 14 x 72-8 mm, Side Sign
25	946-8500-000	1	1	1	1	EA	Cable, PWR/SGL, Smart Series, Side
26	496-1006-820A	2	1	2	1	EA	Vinyl Plug
27*	916-1436-808	--	--	2	2	EA	LED Board, 14 x 36-8 mm, Silver-White
28*	471-1472-008	1	--	1	--	EA	Rear Cover, 14 x 72-8 mm, Side
29*	471-1472-018	--	1	--	--	EA	Rear Cover, 14 x 72-8 mm, Side
30*	493-1408-001	4	4	4	4	EA	Metric, 18-8, SS, Hex Head Cap
31*	494-1408-001	4	4	4	4	EA	Washer, Flat, M8
32*	494-1408-002	4	4	4	4	EA	Washer, Lock, M8
33*	496-4000-301	--	--	--	1	EA	Strain-Relief Fitting
34*	496-4000-303	--	--	--	1	EA	Locking Nut

* SHOWN / HIDDEN BY OTHER PARTS DENOTES ITEM NOT SHOWN

Note: Bracket part numbers are based on bus type and model – Contact Customer Service for correct part numbers.

906-1408-508, 528, 538, 808, 828 and 838 – 14 x 108-8 mm Side Signs

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY						UM	DESCRIPTION
		508	528	538	808	828	838		
		Amber	Amber	Amber	Silver	Silver	Silver		
Fig 11-5	906-1408-xxx	REF	REF	REF	REF	REF	REF	--	14 x 108-8 mm, Side Signs
1	916-PWRS-223	1	1	1	--	--	--	EA	Assembly, Power Supply, w/o ACs
1	916-PWRS-203	--	--	--	1	1	1	EA	Assembly, Power Supply, RO, w/o ACs
2	946-ALED-420	1	1	1	1	1	1	EA	Power Cable, +3.3 VDC, Power Supply Output
3	493-0004-632	10	10	10	10	10	10	EA	Machine Screw, #6-32 x 5/16", Pan Head, Phillips
4	494-0000-632	6	6	6	6	6	6	EA	Locknut, #6-32, Stainless Steel w/Nylon Insert
5	495-0106-PSA	89.0	89.0	89.0	89.0	89.0	89.0	LI	Strip, Adhesive Back, 1/16" x 3/8" PSA
6	495-5710-811	2	2	2	2	2	2	EA	Adjustable Compression Latch
7	495-RVET-001	4	4	4	4	4	4	EA	Rivet, 1/8" Dia. x 1/4" Long, Stainless Steel
8	471-1408-014	1	1	--	1	1	--	EA	Rear Cover, Smart Sign Series, 14 x 108-8 mm, Side Sign
8	471-1408-016	--	--	1	--	--	1	EA	Rear Cover, Smart Sign Series, 14 x 108-8 mm, Side Sign
9	816-2200-021	1	1	1	1	1	1	EA	PCB, Sign Driver 485, C26 / A16
10	816-2200-200	--	--	1	--	--	1	EA	Sign ID Board, Smart Sign, 14 x 108-8 mm, Side Sign
10	816-2200-205	1	1	--	1	1	--	EA	Sign ID Board, Smart Sign, 14 x 108-8 mm, Side Sign

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FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY						UM	DESCRIPTION
		508	528	538	808	828	838		
		Amber	Amber	Amber	Silver	Silver	Silver		
11	946-8500-206	1	1	--	1	1	--	EA	Cable Assembly, Side Power/Controller
12	946-8500-207	1	1	--	1	1	--	EA	Cable Assembly, Controller to ID Board
13	946-8500-208	1	1	1	1	1	1	EA	Cable Assembly, Ribbon, Side Sign, Controller to Light Board
14	916-1436-008	1	1	1	3	3	3	EA	14 x 36-8 mm All-LED Display
15	816-1436-008	2	2	2	--	--	--	EA	14 x 36-8 mm All-LED Display
16	495-CLIP-16WSR	6	6	6	5	5	5	EA	Ribbon Cable Connector Clip
17	946-ALED-400	1	1	1	1	1	1	EA	Power Cable, Red, Display to Display
18	946-ALED-401	1	1	1	1	1	1	EA	Power Cable, Black, Display to Display
19*	493-0010-003	18	18	18	18	18	18	EA	Machine Screw, M3 x 10 mm, Pan Head, Phillips
20*	493-0016-808	8	8	8	8	8	8	EA	Self-Tapping Screw, #8 x 1", Flat Head, Phillips
21	495-4100-001	6	6	6	6	6	6	EA	Cable Tie, 4", Black Nylon
22	495-4378-008	2	2	2	2	2	2	EA	Cable Tie, Anchor Mount, #8
23	476-1400-001	1	1	1	1	1	1	EA	End Plate, Right, 14 x 108-8 mm, Side Sign
24	476-1400-002	1	1	1	1	1	1	EA	End Plate, Left, 14 x 108-8 mm, Side Sign
25	526-1408-001	1	1	1	1	1	1	EA	Extrusion, Finished, 14 x 108-8 mm, Side Sign
26	946-8500-000	1	1	1	1	1	1	EA	Cable, Power/SGL, Smart Series, Side
27*	946-8500-201	--	--	1	--	--	1	EA	Cable, Primary-to-Power Supply, Smart Series, Side

Luminator TwinVision

SMART SERIES II AMBER AND SILVER OPERATIONS AND MAINTENANCE MANUAL

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY						UM	DESCRIPTION
		508	528	538	808	828	838		
		Amber	Amber	Amber	Silver	Silver	Silver		
28*	946-8500-205	1	1	1	--	--	1	EA	Cable Assembly, Front Controller
29*	498-1408-999	1	1	1	1	1	1	EA	Serial Number Label, 14 x 108-8 mm, Side Sign
30*	999-1660-001	2	2	2	2	2	2	EA	U-Joint Insert for Sign Box
31*	496-1006-820A	2	2	2	2	2	2	EA	Vinyl Plug
32*	494-1408-001	4	4	4	4	4	4	EA	Washer, Flat, M8
33*	494-1408-002	4	4	4	4	4	4	EA	Washer, Lock, M8
34*	493-1408-001	4	4	4	4	4	4	EA	Metric, 18-8, SS, Hex Head Cap Screw

* SHOWN / HIDDEN BY OTHER PARTS DENOTES ITEM NOT SHOWN

Note: Bracket part numbers are based on bus type and model – Contact Customer Service for correct part numbers.

906-1660-310 and 830 – 16 x 160-10 mm Side Signs

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY		UM	DESCRIPTION
		310	830		
		Amber	Silver		
Fig. 11-5	906-1660-xxx	REF	REF		16 x 160-10 mm, Side Signs
1	916-PWRS-203	1	--	EA	Assembly Power Supply, 3.3V ,50AMP
1	916-PWRS-207	--	1	EA	Assembly Power Supply, RO, w/o ACs
2	946-ALED-423	1	1	EA	Power Cable, +4.0 VDC, Power Supply Output
3	493-0004-632	6	6	EA	Machine Screw, #6-32 x 5/16", Pan Head, Phillips
4	494-0000-632	6	6	EA	Locknut, #6-32, Stainless Steel w/Nylon Insert
5	495-0106-PSA	35.0	35.0	LI	Strip, Adhesive Back, 1/16" x 3/8" PSA
6	495-5710-811	2	2	EA	Adjustable Compression Latch
7	495-RVET-001	4	4	EA	Rivet, 1/8" Dia. x 1/4" Long, Stainless Steel
8	471-1660-014	1	--	EA	Rear Cover, Smart Sign Series, 16 x 160-10 mm ,Side Sign
8	471-1660-018	--	1	EA	Rear Cover, Smart Sign Series, 16 x 160-10 mm ,Side Sign
9	816-2200-044	1	1	EA	PCB, Sign Driver 485, A20/A20
10	816-2200-200	1	1	EA	Sign ID Board ,Smart Sign, Rear Cover, 16 x 160-10 mm ,Side Sign
11	946-8500-206	1	1	EA	Cable Assembly, Side PWR/Controller
12	946-8500-207	1	1	EA	Cable Assembly, Controller to ID BD
13	N/A	--	--	--	--
14	816-1640-010	3	3	EA	16 x 40-10 mm All-LED Display
15	916-1640-010	1	--	EA	16 x 40-10 mm All-LED Display
15	916-1640-810	--	1	EA	16 x 40-10 mm, Silver, LED Board
16	N/A	--	--	--	--
17	946-ALED-400	2	2	EA	Power Cable, Red, Display to Display
18	946-ALED-401	2	2	EA	Power Cable, Black, Display to Display
19*	493-0010-003	22	22	EA	Machine Screw, M3 x 10 mm, Pan Head, Phillips
20*	493-0016-808	8	8	EA	Self-Tapping Screw, #8 x 1", Flat Head, Phillips
21	495-4100-001	4	4	EA	Cable Tie, 4", Black Nylon
22	495-4378-008	4	4	EA	Cable Tie, Anchor Mount, #8
23	476-1600-010	2	2	EA	End Plate, Left/Right, 16 x 160-10 mm, Side Sign
24	N/A				

Luminator TwinVision

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY		UM	DESCRIPTION
		310	830		
		Amber	Silver		
25	526-1660-010	1	1	EA	Extrusion, Finished, 16 x 160-10 mm, Side Sign
26	946-8500-000	1	1	EA	Cable, PWR/SGL, Smart Series, Side
27*	498-1660-999	1	1	EA	Serial Number Label, 16 x 160-10 mm, Side Sign
28*	999-1660-001	1	1	EA	U-Joint Insert for Sign Box
29*	496-1006-820A	2	2	EA	Vinyl Plug
30*	816-1640-810	3	3	EA	Light Board, 16 x 40-10 mm
31*	946-ALED-106	1	1	EA	Signal Cable, 20-Pos. Ribbon
32*	495-4100-008	1	1	EA	Cable Tie, 8 x 0.095 x 0.045, Black
33*	493-0012-003	2	2	EA	Machine Screw, M3 x 12 mm

* SHOWN / HIDDEN BY OTHER PARTS DENOTES ITEM NOT SHOWN

Note: Bracket part numbers are based on bus type and model – Contact Customer Service for correct part numbers.

986-1408-508 – SIDE SIGN ASSEMBLY, AMBER, CURBSIDE, SMART

ITEM	PART NUMBER	DESCRIPTION	QTY
1	906-1408-508	14 x 108-8 mm, Amber, Side Sign, Curb	1
2	451-1408-001	Sign Mounting Bracket, Right	1
3	451-1408-002	Sign Mounting Bracket, Left	1
4	494-1408-001	Washer, Flat, M8	4
5	494-1408-002	Washer, Lock, M8	4
6	493-1408-001	Metric, 18-8, SST, Hex Head Cap Screw	4

986-1408-538 – SIDE SIGN ASSEMBLY, AMBER, STREETSIDE, SMART

ITEM	PART NUMBER	DESCRIPTION	QTY
1	906-1408-538	14 x 108-8 mm, Amber, Side Sign, Street	1
2	451-1408-042	Sign/Bus Mounting Bracket, Left/Right	2
3	494-1408-001	Washer, Flat, M8	4
4	494-1408-002	Washer, Lock, M8	4
5	493-1408-001	Metric, 18-8, SST, Hex Head Cap Screw	4

986-1408-800 – SIDE SIGN ASSEMBLY, SILVER, CURBSIDE, SMART

ITEM	PART NUMBER	DESCRIPTION	QTY
1	906-1408-808	14 x 108-8 mm, Silver, Side Sign, Curb	1
2	451-1408-002	Sign Mounting Bracket, Left	1
3	451-1408-001	Sign Mounting Bracket, Right	1
4	494-1408-001	Washer, Flat, M8	4
5	494-1408-002	Washer, Lock, M8	4
6	493-1408-001	Metric, 18-8, SST, Hex Head Cap Screw	4

986-0896-NF1 – SIDE SIGN w/BRACKETS, 8 x 96-8 mm, AMBER

ITEM	PART NUMBER	DESCRIPTION	QTY
1	906-0896-518	8 x 96-8 mm, Amber, Side Sign	1
2	451-0896-015	Bracket, Sign to Bus Mounting	1
3	451-0896-016	Bracket, Sign to Bus Mounting	1
4	471-0896-015	Cover, Closeout, Left, 8 x 96	1
5	471-0896-016	Cover, Closeout, Right, 8 x 96	1
6	441-0896-002	Bracket Hardware Kit, 8 x 96	1

986-0896-NF2 – SIDE SIGN w/BRACKETS, 8 x96-8 mm, SILVER

ITEM	PART NUMBER	DESCRIPTION	QTY
1	906-0896-808	8 x 96-8 mm, Silver, Side Sign	1
2	451-0896-015	Bracket, Sign to Bus Mounting	1
3	451-0896-016	Bracket, Sign to Bus Mounting	1
4	471-0896-015	Cover, Closeout, Left, 8 x 96	1
5	471-0896-016	Cover, Closeout, Right, 8 x 96	1
6	441-0896-002	Bracket Hardware Kit, 8 x 96	1

986-1408-NF5 – SIDE SIGN w/BRACKETS, 14 x 108-8 mm, AMBER

ITEM	PART NUMBER	DESCRIPTION	QTY
1	906-1408-608	14 x 108-8 mm, Amber, Side Sign	1
2	451-1408-101	Bracket, Sign Mounting, Left	1
3	451-1408-102	Bracket, Sign Mounting, Right	1
4	451-1408-103	Bracket, Cable Chase Mounting	1
5	471-1408-101	Cover for Bracket 451-1408-101	1
6	471-1408-102	Cover for Bracket 451-1408-102	1
7	441-1408-004	Bracket Hardware Kit	1

986-1660-NF7 – SIDE SIGN w/BRACKETS, 16 x 60-10 mm, AMBER

ITEM	PART NUMBER	DESCRIPTION	QTY
1	906-1660-310	16 x 160-10 mm, Amber, Side Sign	1
2	451-1610-026	Bracket, Sign Mounting, Left	1
3	451-1610-027	Bracket, Sign Mounting, Right	1
4	471-1610-026	Cover, for Bracket	1
5	471-1610-027	Cover, for Bracket	1
6	441-1660-008	Bracket Hardware Kit	1

11.5 Rear Sign



These graphics depict a typical Rear Sign. The different rear signs may vary slightly from these graphic presentations.

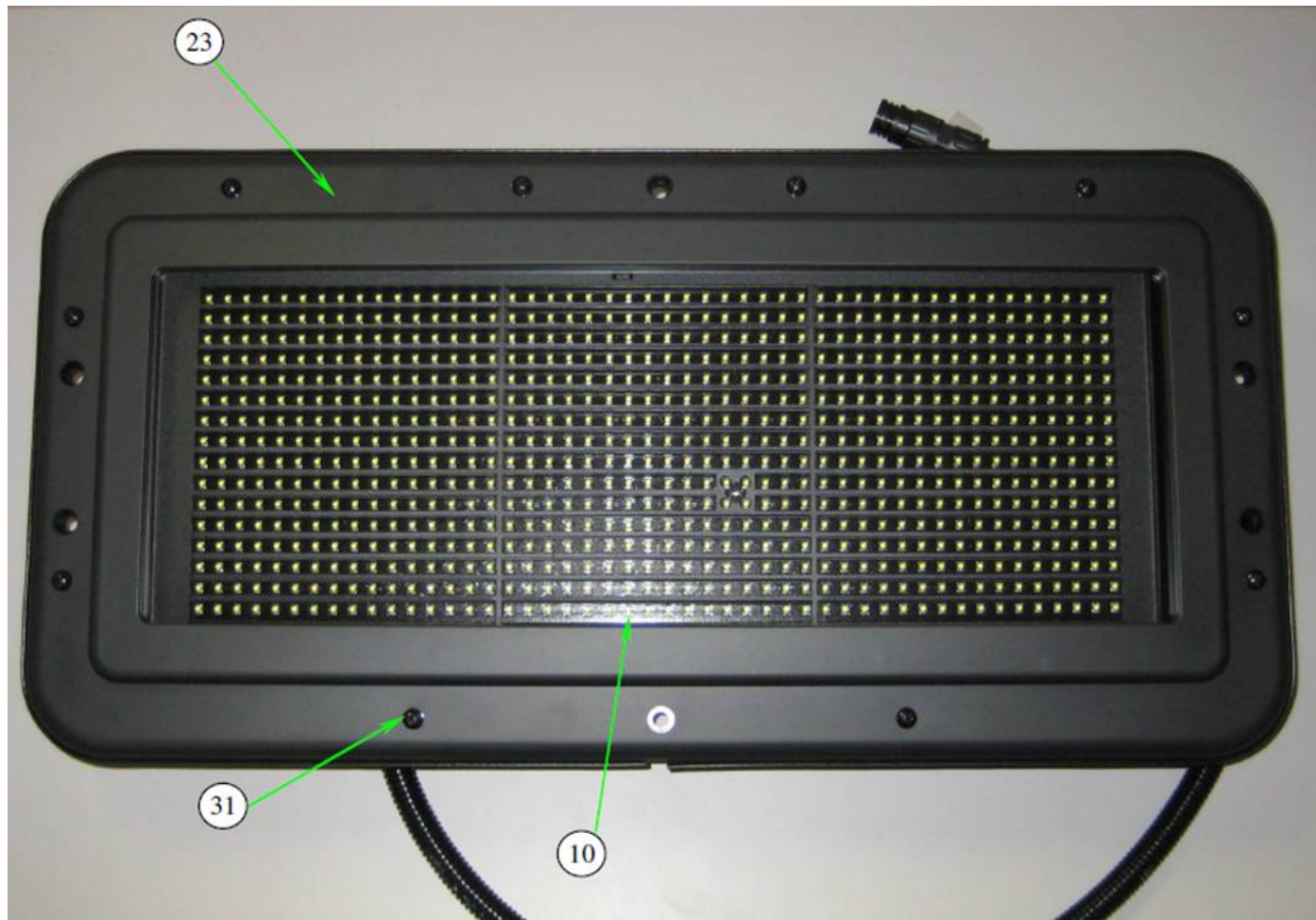


Figure 11-6. Typical Rear Sign, Front View

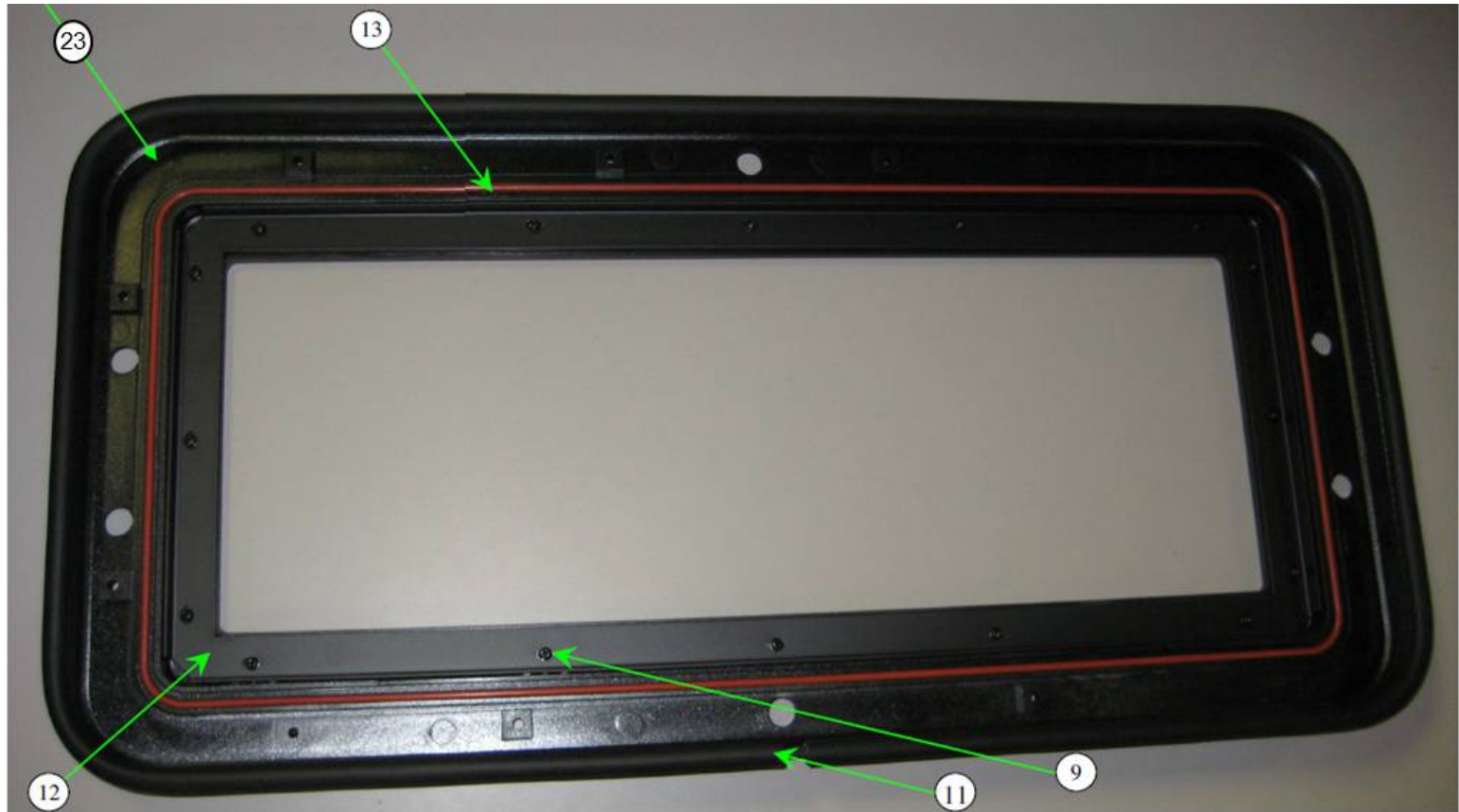


Figure 11-7. Typical Rear Sign Cover, Inside View



Figure 11-8. Typical Rear Sign with Cover Removed



Figure 11-9. Typical Rear Sign with Cover and PWA Removed

Bill of Materials

906-1648-710 and 810 – 16 x 48-10 mm Rear Signs

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY		UM	DESCRIPTION
		710	810		
		Amber	Silver		
Fig. 11-6 thru 11-9	906-1648-xxx	REF	REF		16 x 48-10 mm, Rear Signs
1	916-1648-410	1	--	EA	PCB Assembly, 16 x 48-10 mm , Amber, SS, SMT
1	916-1648-510	--	1	EA	PCB Assembly, 16 x 48-10 mm, Silver, SS, SMT
2	476-1648-006	1	1	EA	Cover, Face, 16 x 48-10 mm ,SMT
3*	856-0924-004	1	1	EA	Rear Shell, Smart Series Sign
4	493-0010-003	6	6	EA	Machine Screw, M3 x 10 mm
5*	476-0931-004	1	1	EA	Cover Plate
6	856-1648-003	1	1	EA	Rear Sign, Rear Shell, Housing for 16 x 48 Smart Series, SMT
7	946-8500-300	1	1	EA	Cable Assembly, Ext/Int, Rear Sign, PWR/SGL, Smart Series
8*	N/A	--	--	--	--
9	493-0503-003	16	16	EA	Screw, M3 x 6 mm, Phillips, Black, w/Lock Washer
10	527-0931-126	1	1	EA	Window, 9 x 31-15 mm, Rear Sign
11	494-0931-005	66	66	LI	Trim Gasket, Rear Sign, Front Cover
12	451-1931-004	1	1	EA	Window Holder Bracket One Pc.
13	494-1931-004	1	1	EA	O-Ring, Orange, for cover
14*	494-1931-006	1	1	EA	O-Ring, Black, Rubber (for window)
15*	493-0508-005	4	4	EA	Screw, M3 x 8 mm, Phillips, Black w/Lock Washer
16*	496-4000-303	1	1	EA	Locking Nut, Nickel-Plated, Brass
17*	495-0003-012	6	6	EA	Standoff, Male-Female, M3 x 0.5, Brass
18*	495-0106-PSA	0.75	0.75	LI	Strip, Adhesive Back, 1/16" x 3/8" PSA
19	N/A	--	--	--	Template
20*	976-1420-003	1	1	EA	9 x 31-15 mm Mounting Bracket Kit, Packed with Rear Sign
20a*	451-0931-001	2	2	EA	Sign Mounting Bracket, Side, External, Rear Sign
20b*	451-0931-002	2	2	EA	Sign Mounting Bracket, Center, External, Rear Sign
20c*	493-1420-750	6	6	EA	Cap Screw, 1/4"-20 x 1/2", Socket Head, Stainless Steel

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY		UM	DESCRIPTION
		710	810		
		Amber	Silver		
21*	471-1931-005	1	1	EA	Rear Shell Housing, 9 x 31-15 mm, Rear Sign
22*	497-NA55-001	0.7	0.7	EA	Brush-on Electrical Tape
23	471-1931-004	1	1	EA	Top Cover
24*	856-1931-002	1	1	EA	Rear Sign Subassembly
25*	N/A	--	--	--	--
26*	N/A	--	--	--	--
27*	498-1648-999	1	1	EA	Serial Number Label, 16 x 48-10 mm, Rear Sign
28*	999-0931-002	1	1	EA	Carton and Packing Materials, External Rear and Route Signs
29*	467-0003-001	0.01	0.01	EA	Threadlocker, Loctite 425
30*	495-4100-001	1	1	EA	Cable Tie, 4", Black Nylon
31	493-0508-004	10	10	EA	Screw, M4 x 20 mm, Phillips, Black w/Lock Washer

* SHOWN / HIDDEN BY OTHER PARTS DENOTES ITEM NOT SHOWN

Note: Bracket part numbers are based on bus type and model – Contact Customer Service for correct part numbers.

11.6 Hybrid Rear Sign



Figure 11-10. Hybrid Rear Sign, Front View

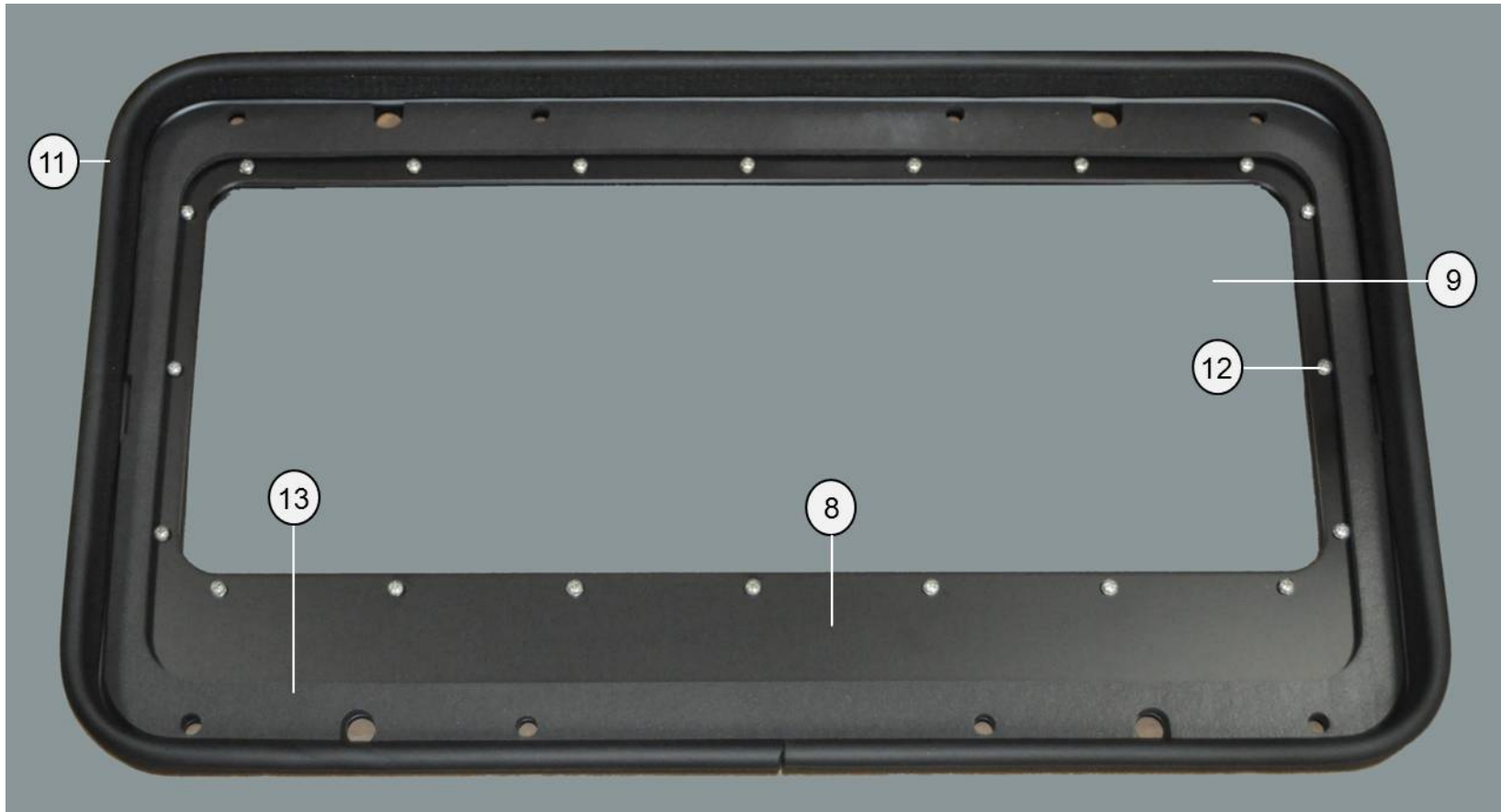


Figure 11-11. Hybrid Rear Sign Cover, Inside View



Figure 11-12. Hybrid Rear Sign, with Cover Removed

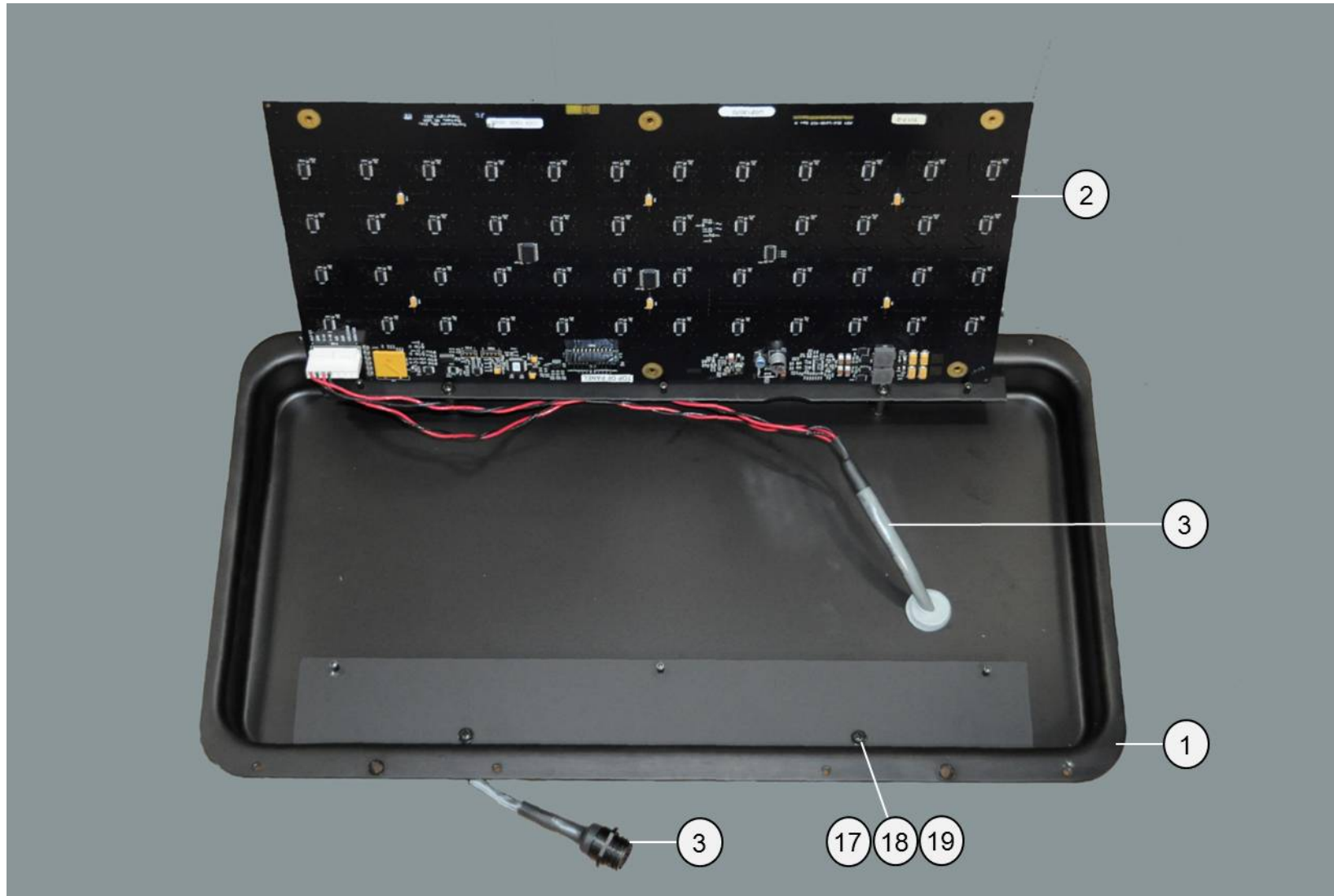


Figure 11-13. Hybrid Rear Sign, with Cover and PWA Removed

906-1648-7Hx and 8Hx – 16 x 48 Hybrid Rear Signs

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY						UM	DESCRIPTION
		7H1	7H2	7H4	8H1	8H2	8H4		
		Amber	Amber	Amber	Silver	Silver	Silver		
Fig. 11-10 thru 11-13	906-1648-xxx	REF	REF	REF	REF	REF	REF		16 x 48-10 mm, Hybrid Rear Signs
1	508450001	1	1	1	1	1	1	EA	Housing, Rear Sign, SMD
2	916-1648-410	1	1	1	--	--	--	EA	PCB Assembly, 16 x 48-10 mm, Amber, SS, SMT
2	916-1648-510	--	--	--	1	1	1	EA	PCB Assembly, 16 x 48-10 mm, Silver, SS, SMT
3	946-8500-1H0	1	1	1	1	1	1	EA	Cable Assembly, External, Rear Hybrid Sign
4	509147001	1	1	1	1	1	1	EA	Bracket Adapter, Top
5	509147002	1	1	1	1	1	1	EA	Bracket Adapter, Bottom
6	508490001	1	1	1	1	1	1	EA	Cover Assembly, Rear Sign, 2-Piece
7	508402001	1	1	1	1	1	1	EA	Cover, Housing, Rear Sign
8	508413001	1	1	1	1	1	1	EA	Clamp, Rear Sign, Cover
9	508414001	1	1	1	1	1	1	EA	Lens, Rear Sign, Cover
10	508415001	3	3	3	3	3	3	EA	Gasket, Lens, Retaining
11	415267021	1	1	1	1	1	1	EA	Trim, Flexible Seal
12*	801280002	20	20	20	20	20	20	EA	Screw Assembly w/Locking Patch
13	508373001	1	1	1	1	1	1	EA	Gasket Cover - Rear Sign
14**	508374002	8	8	8	8	8	8	EA	Washer, Shoulder, Black, 0.26 ID x 0.25"
15*	506468001	2	--	--	2	--	--	EA	Plate Assembly, Nut – Plastic, Rear
15	506468002	--	--	2	--	--	2	EA	Mounting Nut Plate, Horizon, Rear
16*	501118010	1	1	1	1	1	1	EA	Label, Warning-Electrical
17*	81183045	4	4	4	4	4	4	EA	Screw, Corrosion Resistant,

SMART SERIES II AMBER AND SILVER OPERATIONS AND MAINTENANCE MANUAL

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY						UM	DESCRIPTION
		7H1	7H2	7H4	8H1	8H2	8H4		
		Amber	Amber	Amber	Silver	Silver	Silver		
									Black Oxide, Pan Head, #8
18*	80154008	4	4	4	4	4	4	EA	Washer, Flat, #8, Black Oxide
19*	80184022	12	12	12	12	12	12	EA	Washer, Split Lock, #8, Black Oxide
20*	81183047	8	8	8	8	8	8	EA	Screw, Pan Head, Cross Recessed, Black Oxide
21*	801142002	8	8	8	8	8	8	EA	Washer, Flat, #10, Black Oxide
22	800882001	2	2	2	2	2	2	EA	Seal, ICS Connector
23*	81225016	4	--	4	4	--	4	EA	Screw, Machine, Hex Socket Head, Corrosion Resistant
24*	80154011	4	--	4	4	--	4	EA	Washer, Flat, #10, Black Oxide
25*	80184026	4	--	4	4	--	4	EA	Washer, Split Lock, #10, Black Oxide
26*	81183018	6	6	6	6	6	6	EA	Screw, Corrosion Resistant, Black Oxide, Pan Head
27*	80184010	6	6	6	6	6	6	EA	Washer, Lock Split, #4, Corrosion Resistant, Black Oxide
28*	80154004	6	6	6	6	6	6	EA	Washer, Flat, #4 Corrosion Resistant, Black Oxide
29	476-1648-006	1	1	1	1	1	1	EA	Cover, Face, 16 x 48-10 mm, SMT

* SHOWN / HIDDEN BY OTHER PARTS DENOTES ITEM NOT SHOWN

Note: Bracket part numbers are based on bus type and model – Contact Customer Service for correct part numbers.

11.7 Dash Sign



This graphic depicts a typical Dash Sign. The different dash signs may vary slightly from this graphic presentation.

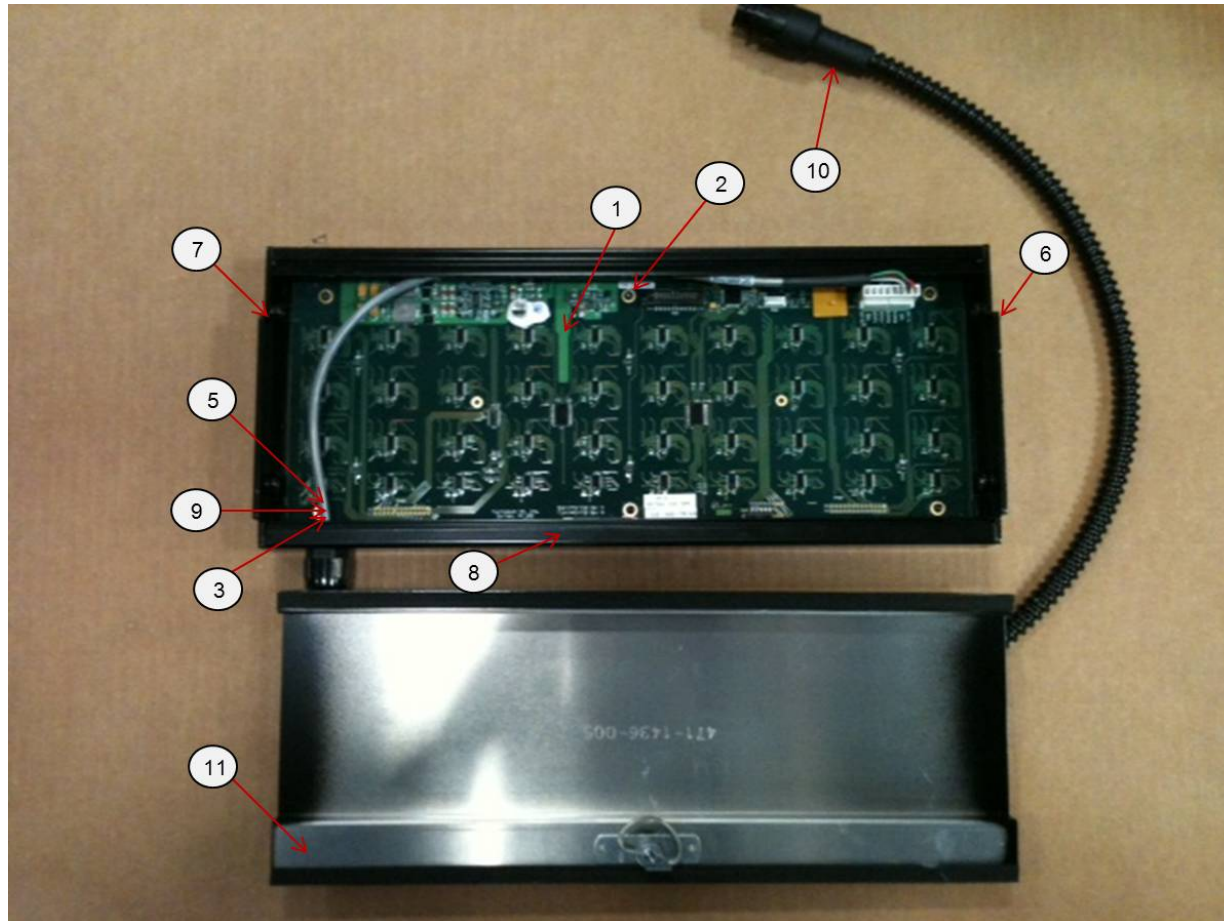


Figure 11-14. Typical Dash Sign, Front View

Bill of Materials

906-1440-308 and 808 – 14 x 40-8 mm Dash Signs, Run

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY		UM	DESCRIPTION
		308	808		
		Amber	Silver		
Fig. 11-10	906-1440-xxx	REF	REF		14 x 40-8 mm, Dash Signs, Run
1	916-1440-708	1	--	EA	14 x 40-8 mm, SMT, Amber, All-LED
1	916-1440-808	--	1	EA	14 x 40-8 mm, Silver, SMT, All-LED
2	493-0503-003	5	5	EA	Screw, M3 x 6 mm, Pan Head, Phillips
3	493-0508-005	1	1	EA	Screw, M3 x 8 mm, Pan Head, Phillips
4*	493-0016-808	8	8	EA	Self-Tapping Screw, #8 x 1", Flat Head, Phillips
5	495-4100-001	1	1	EA	Cable Tie, 4", Black, Nylon
6	476-1400-011	1	1	EA	Plate, End, SMT, Dash, Right Paint
7	476-1400-012	1	1	EA	Plate, End, SMT, Dash, Left Paint
8	526-1440-001	1	1	EA	Extrusion, Finished, 14 x 40-8 mm, Dash Sign
9	495-4378-008	1	1	EA	Cable Tie, Anchor Mount, #8
10	946-8500-310	1	1	EA	Cable Assembly, 14 x 40, Dash Sign
11	856-1436-005	1	1	EA	Rear Cover Assembly, Extrusion
12*	594-1436-010	1	1	EA	Label, DIP Switch Setting Info
13*	471-1440-000	1	1	EA	Insulator, 14 x 40-8 mm Dash, SMT

* SHOWN / HIDDEN BY OTHER PARTS DENOTES ITEM NOT SHOWN

Note: Bracket part numbers are based on bus type and model – Contact Customer Service for correct part numbers.

906-1440-408 and 908 – 14 x 40-8 mm Dash Signs, Route

FIGURE & INDEX #	LUMINATOR TWINVISION PART #	QTY		UM	DESCRIPTION
		408	908		
		Amber	Silver		
Fig. 11-10	906-1440-xxx	REF	REF		14 x 40-8 mm, Dash Signs, Route
1	916-1440-708	1	--	EA	14 x 40-8 mm, Amber, SMT, All-LED
1	916-1440-808	--	1	EA	14 x 40-8 mm, Silver, SMT, All-LED
2	493-0503-003	5	5	EA	Screw, M3 x 6 mm, Pan Head, Phillips
3	493-0508-005	1	1	EA	Screw, M3 x 8 mm, Pan Head, Phillips
4*	493-0016-808	8	8	EA	Self-Tapping Screw, #8 x 1", Flat Head, Phillips
5	495-4100-001	1	1	EA	Cable Tie, 4", Black, Nylon
6	476-1400-011	1	1	EA	Plate, End, SMT, Dash, Right Paint
7	476-1400-012	1	1	EA	Plate, End, SMT, Dash, Left Paint
8	526-1440-001	1	1	EA	Extrusion, Finished, 14 x 40-8 mm, Dash Sign
9	495-4378-008	1	1	EA	Cable Tie, Anchor Mount, #8
10	946-8500-310	1	1	EA	Cable Assembly, 14 x 40, Dash Sign
11	856-1436-005	1	1	EA	Rear Cover Assembly, Extrusion
12*	594-1436-010	1	1	EA	Label, DIP Switch Setting Info
13*	471-1440-000	1	1	EA	Insulator, 14 x 40-8 mm Dash, SMT

* SHOWN / HIDDEN BY OTHER PARTS DENOTES ITEM NOT SHOWN

Note: Bracket part numbers are based on bus type and model – Contact Customer Service for correct part numbers.

986-1440-NF4 – DASH SIGN w/BRACKETS, 14 x 40-8 mm, AMBER, RUN

ITEM	PART NUMBER	DESCRIPTION	QTY
1	906-1440-308	14 x 40-8mm, Amber, Dash Sign, Run	1
2	451-1436-020	Bracket, Sign to Bus Mounting	1
3	451-1436-021	Bracket, Sign to Bus Mounting	1
4	441-1408-001	Bracket Hardware Kit	1

986-1440-NF5 – DASH SIGN w/BRACKETS, 14 x 40-8 mm, AMBER, ROUTE

ITEM	PART NUMBER	DESCRIPTION	QTY
1	906-1440-408	14 x 40-8mm, Amber Dash Sign, Route	1
2	451-1436-020	Bracket, Sign to Bus Mounting	1
3	451-1436-021	Bracket, Sign to Bus Mounting	1
4	441-1408-001	Bracket Hardware Kit	1

986-1440-NF6 – DASH SIGN w/BRACKETS, 14 x 40-8 mm, SILVER, RUN

ITEM	PART NUMBER	DESCRIPTION	QTY
1	906-1440-808	14 x 40-8mm, Silver, Dash Sign, Run	1
2	451-1436-020	Bracket, Sign to Bus Mounting	1
3	451-1436-021	Bracket, Sign to Bus Mounting	1
4	441-1408-001	Bracket Hardware Kit	1

SECTION 12 CABLE DIAGRAMS

12.1 Power/EA Cable- PN# 806-8510-(XXX)

**COMPANY
CONFIDENTIAL**

806-8510-(XXX)

REV	ECO NO.	DESCRIPTION	DATE	DRAWN	DATE	APPROVAL
A	05432	INITIAL RELEASE	11/27/2007	JAG	11/27/2007	JRR
B	05461	CHG CPT FINOUT DESCRIPTION	3/25/2008	JAG	3/26/2008	JRR
C	05526	CHG RED & BLK WIRE, ADD MISSING PIN	4/14/2008	JAG	4/14/2008	JCH
D01	05684	CORRECT BOMS; FIX LOOM; TYPOS	8/19/2008	JRR	8/19/2008	JRR
D02	05727	CORRECT (DRAWING) TYPO ITEM # 3	9/22/2008	CGB	9/22/2008	JRR

CPC 7

- 1 BLU - BATTERY (WP8, POS. C)
- 2 RED - +24V SWITCHED 1 (WP8, POS. A)
- 3 ORG - +24V SWITCHED 2 (WP8, POS. D)
- 4 BLK - GROUND 1 (WP8, POS. B)
- 5 RED - EA (+)(5-30DCV) (WP2, POS. A)
- 6 BLK - EA (-)GROUND (WP2, POS. B)
- 7 BLK - GROUND 2 (WP8, POS. E)

TOP LEVEL ASM P/N	EXTENSION	FINISHED LENGTH "A"	CUT LENGTH "B"	FINISHED LENGTH "C"	CUT LENGTH "D"	TV PRODUCTION BOM
806-8510-038	-038	38 INCHES	4 FEET	30 INCHES	3 FEET	806-8510-038-BOM
806-8510-090	-090	90 INCHES	7.8 FEET	84 INCHES	7.5 FEET	806-8510-090-BOM

NOTES:

1. APPLY HEATSHRINK OVER ALL EXPOSED WIRING. HEATSHRINK SHALL OVERLAP CABLE BY AT LEAST 1/4".
2. HEATSHRINK SHALL BE USED TO COVER ALL WIRING EXITS FROM THE SHEATH.
3. CABLE LENGTH TOLERANCE IS +5%.
4. 100% CONTINUITY TEST REQUIRED. USE SPECIFIED TEST FIXTURE.
5. ALL CHANGES MUST BE APPROVED BY TwinVision ENGINEERING. SEE TwinVision CABLE SPECIFICATIONS FOR FURTHER MANUFACTURING INSTRUCTIONS.
6. CABLES MUST BE CONSISTENT WITH IPCWHMA-A-620 CLASS 2 ACCEPTANCE FOR CABLE AND WIRE HARNESS ASSEMBLIES.
7. LABELS DENOTED BY ENCLOSED DOTTED BOXES.
8. ALL LABELS ARE TO BE PRINTED LEGIBLY WITH PERMANENT METHOD AND ADHERED TO STAY ON THE CABLE OR CABLE BUNDLE.
9. SEE CHART FOR FINISHED CABLE LENGTH AND PIN EXTENSION NUMBER AND LABEL ACCORDINGLY.

Item No.	Part Number	Description	Qty	UOM
1	496-0007-028	Connector, 7-way, CPC Series 1, Std. Sex	1.00	EA
2	496-0000-004	Strain Relief, CPC Cable Clasp, Shell Size 13	1.00	EA
3	496-0002-017	Terminal Socket, 16-18 AWG, Crimp Type, for CPC Series 1	7.00	EA
4	NA			
5	626-0007-014	Wire, Hook-Up, 14 AWG, Black, Stranded, PVC	"B" & "D"	FT
6	626-0006-014	Wire, 14 AWG, Red, Stranded, PVC	"B" & "D"	FT
7	626-0004-014	Wire, 14 AWG, Blue, Stranded, PVC	"B"	FT
8	626-0005-014	Wire, 14 AWG, Orange, Stranded, PVC	"B"	FT
9	496-3000-400	Connector, 2-way, Withsk. Shroud, Male Terminal	1.00	EA
10	496-3000-100	Terminal Pin, 16-14 AWG, Crimp Type, for Withsk. Shroud	7.00	EA
11	496-3000-400	Connector, 6-way, Withsk. Shroud, Male Terminal	1.00	EA
12	NA			
13	496-3000-201	Seal, for 14-16 AWG Terminal, Light Gray	7.00	EA
14	496-0000-003	Plug, for Weatherback Connect, Green	1.00	EA
15	626-0105-387	Heatshrink, 3/8", Black, 2:1 Flame-Retardant 400# roll	0.50	FT
16	496-0960-001	Label, ID, Brady Machine, Roll of 10,000 Labels	3.00	EA
17	626-9999-001	Tubing, Com. Black Nylon, 0.545" OD	"D"	FT
18	NA			
19	626-0105-050	Heatshrink, 1/2", Black, 2:1 Flame-Retardant 400# roll	0.50	FT
20	NA			

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UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN: UNITS: INCHES

DRAWN BY: CGB

Luminator TwinVision

TITLE
CABLE ASSEMBLY, POWER / EA , SMART SERIES

DRAWING NO.
T806-8510-(XXX)-ASM

SIZE USED ON: xxxxxx

DATE: 9/22/2008

SHEET 1 OF 1

12.2 OCU (XXX) Inches Cable- PN#-806-8520-(XXX)

COMPANY
CONFIDENTIAL

806-8520-(XXX)

REVISION HISTORY						
REV	ECO TAG	DESCRIPTION	DATE	DRAWN	DATE	APPROVAL
ADD	0507	INITIAL RELEASE	11/02/07	JAS	11/02/07	JFR
ADD	0545	ADD LOCKWREN GUYE	02/02/08	JAS	02/02/08	JFR
ADD	0603	CORRECT PIN FOR CPC SOCKET TERM	07/02/08	JFR	07/02/08	JDK

CPC9 CONNECTOR PINOUT

POS. 1 - RED 22AWG (+24V)

POS. 2 - NC

POS. 3 - BLACK 22AWG (GROUND)

POS. 4 - NC

POS. 5 - BLUE 22AWG (RIATT)

POS. 6 - ORANGE 22AWG (GND)

POS. 7 - WHITE 22AWG (+485 DATA)

POS. 8 - GREEN 22AWG (-485 DATA)

POS. 9 - DRAIN / SHIELD 22AWG

CPC9 CONNECTOR PINOUT

POS. 1 - RED 22AWG (+24V)

POS. 2 - NC

POS. 3 - BLACK 22AWG (GROUND)

POS. 4 - NC

POS. 5 - BLUE 22AWG (RIATT)

POS. 6 - ORANGE 22AWG (GND)

POS. 7 - WHITE 22AWG (+485 DATA)

POS. 8 - GREEN 22AWG (-485 DATA)

POS. 9 - DRAIN / SHIELD 22AWG

TOP LEVEL ASM PIN	EXTENSION	FINISHED LENGTH	CUT LENGTH	IV PRODUCTION BOM
		LENGTH "A"	LENGTH "B"	
806-8520-048	-048	48 INCHES	4.5 FEET	T806-8520-048-BOM
806-8520-060	-060	60 INCHES	5 FEET	T806-8520-060-BOM
806-8520-072	-072	72 INCHES	7 FEET	T806-8520-072-BOM
806-8520-130	-130	130 INCHES	11 FEET	T806-8520-130-BOM
806-8520-244	-244	244 INCHES	21 FEET	T806-8520-244-BOM
806-8520-312	-312	312 INCHES	27 FEET	T806-8520-312-BOM

NOTES:

1. APPLY HEATSHRINK OVER ALL EXPOSED WIRING, HEATSHRINK SHALL OVERLAP CABLE BY AT LEAST 1/4".
2. HEATSHRINK SHALL BE USED TO COVER ALL WIRING EXITS FROM THE SHEATH.
3. CABLE LENGTH TOLERANCE IS +5%.
4. 100% CONTINUITY TEST REQUIRED. USE SPECIFIED TEST FIXTURE.
5. ALL CHANGES MUST BE APPROVED BY TwinVision ENGINEERING. SEE TwinVision CABLE SPECIFICATIONS FOR FURTHER MANUFACTURING INSTRUCTIONS.
6. CABLES MUST BE CONSISTENT WITH IPCWHMA-4-620 CLASS 2 ACCEPTANCE FOR CABLE AND WIRE HARNESS ASSEMBLIES.
7. LABELS DENOTED BY ENCLOSED DOTTED BOXES.
8. ALL LABELS ARE TO BE PRINTED LEGIBLY WITH PERMANENT METHOD AND AND ADHERED TO STAY ON THE CABLE OR CABLE BUNDLE.
9. SEE CHART FOR FINISHED CABLE LENGTH AND PIN EXTENSION NUMBER AND LABEL ACCORDINGLY.

Item No.	Part Number	Description	Qty	UOM
1	496-2000-005	Connector, CPC, 9 Position, Plug, Series 1, Size 13, std.	2.00	EA
2	496-2000-004	Strain Relief, CPC Cable Clamp, Shell Size 13	2.00	EA
3	496-0002-007	Terminal, Socket, 20-24 AWG, Crimp Type, for CPC Series 1	14.00	EA
4	626-9999-400	Tubing, Corrugated, 1/4" OD	"A"	FT
5	496-0950-001	Label, AS PER DRAWING	3.00	EA
6	626-0763-022	Cable, Multi-conductor, 6 Conductor, 22 AWG, SHIELDED	"B"	FT
7	626-0105-387	Heatshrink tubing, black, 3/8 IN.	0.33	FT
8	626-0105-125	Heatshrink tubing, black, 1/4 IN.	0.33	FT
9	626-0105-063	Heatshrink tubing, black, 1/16 IN.	0.33	FT

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UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN: UNITS: INCHES

DRAWN BY: JFR / JDK

Luminator TwinVision

TITLE: CABLE ASM, SmartSeries, OCU, XXX IN.

DRAWING NO.: T806-8520-XXX-ASM

USED ON: Smart Series All - LED Sign System

DATE: 11/02/08

SHEET 1 OF 1

12.3 Sign Interconnect Cable-PN# 806-8500-(XXX)

COMPANY CONFIDENTIAL

806-8500-(XXX)

REVISION RECORD						
REV	ECO NO.	DESCRIPTION	DATE	DRAWN	DATE	APPROVAL
A	06377	INITIAL	11/27/2007	JAS	11/27/2007	JRR

CONNECTOR PINOUT

POS. 1 - JUMPER
 POS. 2 - JUMPER
 POS. 3 - (+24) RED 14 AWG
 POS. 4 - GROUND BLACK 14 AWG
 POS. 5 - (+485) SIGNAL A GREEN 22
 POS. 6 - (-485) SIGNAL B WHITE 22
 POS. 7 - SHIELD (DRAIN WIRES)

CONNECTOR PINOUT

POS. 1 - JUMPER
 POS. 2 - JUMPER
 POS. 3 - (+24) RED 14 AWG
 POS. 4 - GROUND BLACK 14 AWG
 POS. 5 - (+485) SIGNAL A GREEN 22
 POS. 6 - (-485) SIGNAL B WHITE 22
 POS. 7 - SHIELD (DRAIN WIRES)

TOP LEVEL ASM PIN	EXTENSION	FINISHED LENGTH LENGTH "A"	CUT LENGTH LENGTH "B"	TV PRODUCTION BOM
806-8500-100	-100	100 INCHES	11 FEET	806-8500-100-BOM
806-8500-168	-168	168 INCHES	15 FEET	806-8500-168-BOM
806-8500-505	-505	505 INCHES	42 FEET	806-8500-505-BOM
806-8500-552	-552	552 INCHES	47 FEET	806-8500-552-BOM

NOTES:

1. APPLY HEATSHRINK OVER ALL EXPOSED WIRING, HEATSHRINK SHALL OVERLAP CABLE BY AT LEAST 1/4".
2. HEATSHRINK SHALL BE USED TO COVER ALL WIRING EXITS FROM THE SHEATH.
3. CABLE LENGTH TOLERANCE IS +5%.
4. 100% CONTINUITY TEST REQUIRED. USE SPECIFIED TEST FIXTURE.
5. ALL CHANGES MUST BE APPROVED BY TwinVision ENGINEERING. SEE TwinVision CABLE SPECIFICATIONS. FOR FURTHER MANUFACTURING INSTRUCTIONS.
6. CABLES MUST BE CONSISTENT WITH IPC/WHMA-A-620 CLASS 2 ACCEPTANCE FOR CABLE AND WIRE HARNESS ASSEMBLIES.
7. LABELS DENOTED BY ENCLOSED DOTTED BOXES.
8. ALL LABELS ARE TO BE PRINTED LEGIBLY WITH PERMANENT METHOD AND ADHERED TO STAY ON THE CABLE OR CABLE BUNDLE.
9. SEE CHART FOR FINISHED CABLE LENGTH AND PIN EXTENSION NUMBER AND LABEL ACCORDINGLY.

Item No.	Part Number	Description	Qty	UOM
1	496-1007-017	Connector, CPC, 7 Position, Plug, Series 1, Size 13, Rev. Sex	2.00	EA
2	496-2000-004	Strain Relief, CPC Cable Clamp, Shell Size 13	2.00	EA
3	496-0002-005	Terminal Pin, 20-24 AWG, Crimp Type, for CPC Series 1	3.00	EA
3	496-0002-027	Terminal Pin, 14-18 AWG, Crimp Type, for CPC Series 1	4.00	EA
4	626-0105-387	Heatshrink, 3/8", Black, 2:1, Flame-Retardant 100' roll	0.17	FT
5	498-0950-001	Labels, As Per Drawing	1.00	EA
6	626-8500-001	Cable, 6 Conductor, Shielded, 14 & 22 AWG, Yellow PVC	"B"	FT

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--	---	--

12.4 Sign-to-VLU (J1708) Cable-PN# 806-8515-XXX

COMPANY
CONFIDENTIAL

806-8515-XXX

REV	ECO NO.	DESCRIPTION	DATE	DRAWN	DATE	APPROVAL
A	05697	INITIAL RELEASE	8/29/2008	JRR	8/29/2008	JRR

DB9 CONNECTOR PINOUT

POS. 1 - J1708 DATA B (BLK)
POS. 2 - J1708 DATA A (RED)

SOLDER DRAIN WIRE TO SHELL

CPC4 CONNECTOR PINOUT

POS. 1 - J1708 DATA A (RED)
POS. 2 - J1708 DATA B (BLK)

CUT DRAIN WIRE BACK TO SHEATH

NOTES:

- CABLE LENGTH TOLERANCE IS +5%.
- 100% CONTINUITY TEST REQUIRED. USE SPECIFIED TEST FIXTURE.
- ALL CHANGES MUST BE APPROVED BY DIGITAL RECORDERS ENGINEERING. SEE DR SPECIFICATION FOR FURTHER MANUFACTURING INSTRUCTIONS.
- CABLES MUST BE CONSISTENT WITH IPC/WHMA-A-620 CLASS 2 ACCEPTANCE FOR CABLE AND WIRE HARNESS ASSEMBLIES.
- LABELS DENOTED BY ENCLOSED DOTTED BOXES.
- ALL LABELS ARE TO BE PRINTED LEGIBLY WITH PERMANENT METHOD AND ADHERED TO STAY ON THE CABLE OR CABLE BUNDLE.

TOP LEVEL ASM P/N	EXTENSION	FINISHED LENGTH LENGTH "A"	CUT LENGTH LENGTH "B"	TV PRODUCTION BOM
806-8515-036	-036	36 INCHES	3.5 FEET	T806-8515-036-BOM
806-8515-084	-084	84 INCHES	8 FEET	T806-8515-084-BOM

Item No.	Part Number	Description	Qty	UOM
1	495-0002-016	Connector, CPC, 4 Position, Plug, Series 1, Size 11, Rev.	1.00	EA
2	495-2000-001	Strain Relief, CPC Cable Clamp, Shell Size 11	1.00	EA
3	495-0002-007	Terminal Socket, 24-20 AWG, Crimp Type, for CPC	2.00	EA
4	825-0105-250	Heatshrink, 1/4", Black, 2:1, Flame-Retardant 500' roll	0.17	FT
5	825-1352-022	Cable, 22 AWG, FOUR Conductor	"B"	FT
6	495-2005-010	Connector, 9-way, D-Series Recept., Solder Type	1.00	EA
7	495-9999-012	Strain Relief Hood, 9-way, for D-Series Connector	1.00	EA
8	495-0950-001	Label, ID, Brady Machine, Roll of 10,000 Labels	3.00	EA
9	825-0105-125	Heatshrink, 1/8", Black, 2:1, Flame-Retardant 500' roll	0.33	FT
10	825-0105-063	Heatshrink, 1/16", Black, 2:1, Flame-Retardant 500' roll	0.08	FT
11	493-0440-002	Screwlock, 5/8" hexnut	2.00	EA

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ORIGINAL OEM: NA

DRAWN: John DATE: 12/13/07

USED ON:

ENGINEER: JRR

AWG, TYPE, COMPONENT

Luminator TwinVision

TITLE: CABLE ASSEMBLY, SIGN TO VLU (J1708) SMART SERIES

DRAWING NO.: T806-8515-XXX-ASM

SIZE: PROJECT B

SCALE: NTS

SHEET 1 OF 1

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900 Klein Road, Plano, Texas 75074 (USA)

Phone: (972) 424-6511 / FAX: (972) 423-8515

Att 3

Prepared By Steve Halberstadt	File Name OTVIA_JSON REV2.DOCX		
Approved Steve Halberstadt	Date 1/15/2016	Rev 2	Reference

OTvia2 JSON Commands

Date: January 15 2016

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1. Revision History

Revision	Date	Author	Comments
001	Oct 21, 2014	Steve Halberstadt	First
002	Jan 16, 2016	Steve Halberstadt	Updated copyright. Updated Audience. Removed extraneous coding suggestions unrelated to JSON command definitions. Repositioned 'PredictionTimes' structure note for clarity.

2. Overview

2.1. Scope

This document describes the JSON code interface to Digital Recorders (Clever Devices) OTvia2. It includes examples of commands which can be passed to the server as well as the structures of the returned information.

2.2. Audience for this Document

This document is intended for the exclusive use of Clever Devices, licensed OTvia2 owners, and third party licensees to which the Clever Devices and/or OTvia2 owners have provided explicit rights to interface with specified OTvia2 server(s). This document may NOT be used outside of this defined context and may NOT be publicly distributed.

2.3. Abbreviations

Abbreviation	Description
OTvia	On-Time Vehicle Information Access (real time transit info product)
JSON	JavaScript Object Notation
AJAX	Asynchronous JavaScript + XML

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3. JSON Structures

3.1. JSON Vehicle structure

```
{
  "vehicle":{
    "routeID":0,           - id of route the vehicle is running.
    "patternID":0,        - id of Pattern the vehicle is running.
    "workPieceID":0,      - id of Workpiece the vehicle is running.
    "colorHexText":"c0c0c0",- color to draw vehicle.
    "id":1221,            - id of the vehicle.
    "oos":false,          - Boolean flag indicating if the vehicle is out of service
    "update":false        - vehicle has been updated since last request
  }
}
```

3.2. JSON Route structure

```
{
  Route:{
    RouteID:1,           - Id of route (internal database id)
    Name:"ROUTE 1",      - Name of Route
    LogNum:1,            - Route Number (customer facing)
    ColorRoute:"0000ff", - Color to draw route info
    ColorVeh:"0000ff"    - Color to draw vehicles on this route
  }
}
```

3.3. JSON Shelter structure

```
{
  "Shelter":{
    "routeLogNumbers":[ 2, 16], - All routes that predict to this shelter
    "minor":false,              - Boolean true if minor stop.
    "majorRoutes":[2, 16],      - Routes that have major stops predicting to the shelter.
    "ShelterId":2200,           - Id of the Shelter
    "ShelterName":"GARDENWALK", - Name of the Shelter
    "Latitude":3380551,         - Latitude location of shelter.
    "Longitude":-11791114,      - Longitude location of shelter.
  }
}
```


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```

    "update":true,           - shelter has been updated since last request
    "WebLabel":""           - prediction text for shelter

    "PredictionTimes":{     - Prediction times for each route.
      "shelterPred22002-1413578706072":1413999003000,
      "shelterPred220016-1413578706073":1414001084000
    }
  }
}

```

Note... The PredictionTimes structure is defined below.

shelterPred<ShelterID><Route#>-<internal system ID>:<prediction time epoch ms>

3.4. JSON RouteLayer structure

```

{
  "RouteLayer":{
    "RouteID":2,           - route id layer applies to
    "Name":"ROUTE 2",     - route name layer applies to
    "LogNum":2,           - route number (customer facing) layer applies to
    "ColorRoute":"ff0000", - color to draw layer
    "ColorVeh":255,       - color to draw vehicles on this route.
    "PolyLines":[ ],     - unused
    "LayerArray":[
      {
        Layer:{
          LayerID:1,
          CoordArray:[
            {
              Coordinate:{
                Latitude:3380942,
                Longitude:-11791732
              }
            },
            {
              Coordinate:{
                Latitude:3380944,
                Longitude:-11791613
              }
            },
            {
              Coordinate:{
                Latitude:3380934,

```

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Longitude: -11791603

}
}

}}}}}}

Att 4

Attachment 3: Sample OTvia2 data

In response to /art/packet/json/shelter

```
{ "ShelterArray": [{"Shelter" : {"routeLogNumbers" : [20], "minor" :
false, "majorRoutes" : [20], "ShelterId" : 1100, "ShelterName" : "TOY
STORY TRANSPORTATION CENTER", "Latitude" : 3379997, "Longitude" : -
11791177, "update" : true, "WebLabel" : "
Stop : TOY STORY TRANSPORTATION CENTER (1100)
ROUTE 20
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [1],
"minor" : false, "majorRoutes" : [1], "ShelterId" : 1, "ShelterName" :
"DISNEYLAND RESORT", "Latitude" : 3380938, "Longitude" : -11791719,
"update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (1)
ROUTE 1
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [2],
"minor" : false, "majorRoutes" : [2], "ShelterId" : 2, "ShelterName" :
"DISNEYLAND RESORT", "specialShelterIcon" :
"agency_images/special_stop_markers/transit_center.png", "Latitude" :
3380938, "Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (2)
ROUTE 2
Next Arrival (Bus:1219) 2:51 PM Jan 15th
", "PredictionTimes" : {"shelterPred22-
1452699285361" :1452898275000}}}, {"Shelter" : {"routeLogNumbers" :
[3], "minor" : false, "majorRoutes" : [3], "ShelterId" : 3,
"ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938,
"Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (3)
ROUTE 3
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [4],
"minor" : false, "majorRoutes" : [4], "ShelterId" : 4, "ShelterName" :
"DISNEYLAND RESORT", "Latitude" : 3380938, "Longitude" : -11791719,
"update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (4)
ROUTE 4
Next Arrival (Bus:1221) 3:05 PM Jan 15th
", "PredictionTimes" : {"shelterPred44-
1452699285362" :1452899110000}}}, {"Shelter" : {"routeLogNumbers" :
[5], "minor" : false, "majorRoutes" : [5], "ShelterId" : 5,
"ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938,
"Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (5)
ROUTE 5
Next Arrival (Bus:1220) 2:52 PM Jan 15th
", "PredictionTimes" : {"shelterPred55-
1452699285363" :1452898357000}}}, {"Shelter" : {"routeLogNumbers" :
[6], "minor" : false, "majorRoutes" : [6], "ShelterId" : 6,
"ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938,
"Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (6)
ROUTE 6
```

```
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [7],
"minor" : false, "majorRoutes" : [7], "ShelterId" : 7, "ShelterName" :
"DISNEYLAND RESORT", "Latitude" : 3380938, "Longitude" : -11791719,
"update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (7)
ROUTE 7
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [8],
"minor" : false, "majorRoutes" : [8], "ShelterId" : 8, "ShelterName" :
"DISNEYLAND RESORT", "Latitude" : 3380938, "Longitude" : -11791719,
"update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (8)
ROUTE 8
Next Arrival (Bus:1208) 3:01 PM Jan 15th
", "PredictionTimes" : {"shelterPred88-
1452699285364" :1452898898000}}}, {"Shelter" : {"routeLogNumbers" :
[9], "minor" : false, "majorRoutes" : [9], "ShelterId" : 9,
"ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938,
"Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (9)
ROUTE 9
Next Arrival (Bus:1201) 2:54 PM Jan 15th
", "PredictionTimes" : {"shelterPred99-
1452699285416" :1452898472000}}}, {"Shelter" : {"routeLogNumbers" :
[10], "minor" : false, "majorRoutes" : [10], "ShelterId" : 10,
"ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938,
"Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (10)
ROUTE 10
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [11],
"minor" : false, "majorRoutes" : [11], "ShelterId" : 11,
"ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938,
"Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (11)
ROUTE 11
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [12],
"minor" : false, "majorRoutes" : [12], "ShelterId" : 12,
"ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938,
"Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (12)
ROUTE 12
Next Arrival (Bus:2161) 2:56 PM Jan 15th
", "PredictionTimes" : {"shelterPred1212-
1452699285365" :1452898569000}}}, {"Shelter" : {"routeLogNumbers" :
[14], "minor" : false, "majorRoutes" : [14], "ShelterId" : 14,
"ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938,
"Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (14)
ROUTE 14
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" :
[15,30,31,151], "minor" : false, "majorRoutes" : [15,30,31,151],
"ShelterId" : 15, "ShelterName" : "DISNEYLAND RESORT", "Latitude" :
3380938, "Longitude" : -11791719, "update" : true, "WebLabel" : "

```

Stop : DISNEYLAND RESORT (15)
ROUTE 15
- Waiting for prediction(s) -
ANGELS EXPRESS
- Waiting for prediction(s) -
DUCKS EXPRESS
- Waiting for prediction(s) -
ROUTE 15A
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" :
[1,3,14], "minor" : false, "majorRoutes" : [1,3,14], "ShelterId" :
3004, "ShelterName" : "CONVENTION WAY N/B", "Latitude" : 3380004,
"Longitude" : -11791501, "update" : true, "WebLabel" : "
Stop : CONVENTION WAY N/B (3004)
ROUTE 1
Next Arrival (Bus:2152) 3:09 PM Jan 15th
ROUTE 3
Next Arrival (Bus:2158) 3:06 PM Jan 15th
ROUTE 14
- Waiting for prediction(s) -
", "PredictionTimes" : {"shelterPred30041-
1452699285366" :1452899341000,"shelterPred30043-
1452699285367" :1452899203000}}}, {"Shelter" : {"routeLogNumbers" :
[17], "minor" : false, "majorRoutes" : [17], "ShelterId" : 17,
"ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938,
"Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (17)
ROUTE 17 - IB
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [1,2,3],
"minor" : false, "majorRoutes" : [1,2,3], "ShelterId" : 3005,
"ShelterName" : "RED LION", "Latitude" : 3380379, "Longitude" : -
11791513, "update" : true, "WebLabel" : "
Stop : RED LION (3005)
ROUTE 1
Next Arrival (Bus:2152) 3:11 PM Jan 15th
ROUTE 2
- Waiting for prediction(s) -
ROUTE 3
Next Arrival (Bus:2158) 3:07 PM Jan 15th
", "PredictionTimes" : {"shelterPred30051-
1452699285368" :1452899471000,"shelterPred30053-
1452699285369" :1452899232000}}}, {"Shelter" : {"routeLogNumbers" :
[16], "minor" : false, "majorRoutes" : [16], "ShelterId" : 16,
"ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938,
"Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (16)
ROUTE 16
Next Arrival (Bus:1107) 3:00 PM Jan 15th
", "PredictionTimes" : {"shelterPred1616-
1452699285417" :1452898849000}}}, {"Shelter" : {"routeLogNumbers" :
[10], "minor" : false, "majorRoutes" : [10], "ShelterId" : 3006,
"ShelterName" : "WALMART", "Latitude" : 3381908, "Longitude" : -
11790825, "update" : true, "WebLabel" : "
Stop : WALMART (3006)
ROUTE 10
Next Arrival (Bus:1106) 3:01 PM Jan 15th

```
", "PredictionTimes" : {"shelterPred300610-1452699285418" :1452898909000}}}, {"Shelter" : {"routeLogNumbers" : [19], "minor" : false, "majorRoutes" : [19], "ShelterId" : 19, "ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938, "Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (19)
ROUTE 19
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [10], "minor" : false, "majorRoutes" : [10], "ShelterId" : 3007, "ShelterName" : "PACKING HOUSE", "Latitude" : 3383095, "Longitude" : -11791223, "update" : true, "WebLabel" : "
Stop : PACKING HOUSE (3007)
ROUTE 10
Next Arrival (Bus:1106) 3:04 PM Jan 15th
", "PredictionTimes" : {"shelterPred300710-1452699285419" :1452899053000}}}, {"Shelter" : {"routeLogNumbers" : [18], "minor" : false, "majorRoutes" : [18], "ShelterId" : 18, "ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938, "Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (18)
ROUTE 18
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [21], "minor" : false, "majorRoutes" : [21], "ShelterId" : 21, "ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938, "Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (21)
ROUTE 21
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [1], "minor" : false, "majorRoutes" : [1], "ShelterId" : 3001, "ShelterName" : "TARGET N/B", "Latitude" : 3378918, "Longitude" : -11791475, "update" : true, "WebLabel" : "
Stop : TARGET N/B (3001)
ROUTE 1
Next Arrival (Bus:2152) 3:04 PM Jan 15th
", "PredictionTimes" : {"shelterPred30011-1452699285370" :1452899076000}}}, {"Shelter" : {"routeLogNumbers" : [20], "minor" : false, "majorRoutes" : [20], "ShelterId" : 20, "ShelterName" : "DISNEYLAND RESORT", "Latitude" : 3380938, "Longitude" : -11791719, "update" : true, "WebLabel" : "
Stop : DISNEYLAND RESORT (20)
ROUTE 20
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [1,2], "minor" : false, "majorRoutes" : [1,2], "ShelterId" : 3002, "ShelterName" : "DAYS INN MAINGATE", "Latitude" : 3379265, "Longitude" : -11791487, "update" : true, "WebLabel" : "
Stop : DAYS INN MAINGATE (3002)
ROUTE 1
Next Arrival (Bus:2152) 3:05 PM Jan 15th
ROUTE 2
- Waiting for prediction(s) -
", "PredictionTimes" : {"shelterPred30021-1452699285371" :1452899124000}}}, {"Shelter" : {"routeLogNumbers" : [1,2], "minor" : false, "majorRoutes" : [1,2], "ShelterId" : 3003,
```

"ShelterName" : "BW RAFFLES", "Latitude" : 3379704, "Longitude" : -11791497, "update" : true, "WebLabel" : "
Stop : BW RAFFLES (3003)
ROUTE 1
Next Arrival (Bus:2152) 3:06 PM Jan 15th
ROUTE 2
- Waiting for prediction(s) -
", "PredictionTimes" : {"shelterPred30031-1452699285372" :1452899219000}}}, {"Shelter" : {"routeLogNumbers" : [14,15,30,31,151], "minor" : false, "majorRoutes" : [14,15,30,31,151], "ShelterId" : 6000, "ShelterName" : "ARTIC", "Latitude" : 3380344, "Longitude" : -11787677, "update" : true, "WebLabel" : "
Stop : ARTIC (6000)
ROUTE 14
Next Arrival (Bus:1108) 2:59 PM Jan 15th
ROUTE 15
Next Arrival (Bus:1211) 3:07 PM Jan 15th
ANGELS EXPRESS
- Waiting for prediction(s) -
DUCKS EXPRESS
- Waiting for prediction(s) -
ROUTE 15A
- Waiting for prediction(s) -
", "PredictionTimes" : {"shelterPred600014-1452699285432" :1452898748000,"shelterPred600015-1452699285433" :1452899266000}}}, {"Shelter" : {"routeLogNumbers" : [11], "minor" : false, "majorRoutes" : [11], "ShelterId" : 4005, "ShelterName" : "MENAGE", "Latitude" : 3381749, "Longitude" : -11791577, "update" : true, "WebLabel" : "
Stop : MENAGE (4005)
ROUTE 11
Next Arrival (Bus:1216) 3:04 PM Jan 15th
", "PredictionTimes" : {"shelterPred400511-1452699285375" :1452899093000}}}, {"Shelter" : {"routeLogNumbers" : [11], "minor" : false, "majorRoutes" : [11], "ShelterId" : 4004, "ShelterName" : "BALL ROAD & CAST WAY", "Latitude" : 3381795, "Longitude" : -11792129, "update" : true, "WebLabel" : "
Stop : BALL ROAD & CAST WAY (4004)
ROUTE 11
Next Arrival (Bus:1216) 3:03 PM Jan 15th
", "PredictionTimes" : {"shelterPred400411-1452699285376" :1452899019000}}}, {"Shelter" : {"routeLogNumbers" : [17], "minor" : false, "majorRoutes" : [17], "ShelterId" : 4007, "ShelterName" : "KAISER HOSPITAL - IB", "Latitude" : 3385320, "Longitude" : -11784459, "update" : true, "WebLabel" : "
Stop : KAISER HOSPITAL - IB (4007)
ROUTE 17 - IB
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [9], "minor" : false, "majorRoutes" : [9], "ShelterId" : 4001, "ShelterName" : "DESERT PALMS", "Latitude" : 3380346, "Longitude" : -11791559, "update" : true, "WebLabel" : "
Stop : DESERT PALMS (4001)
ROUTE 9
Next Arrival (Bus:1201) 3:12 PM Jan 15th
", "PredictionTimes" : {"shelterPred40019-1452699285420" :1452899525000}}}, {"Shelter" : {"routeLogNumbers" :


```
[11], "minor" : false, "majorRoutes" : [11], "ShelterId" : 4003,
"ShelterName" : "SPRINGHILL SUITES", "Latitude" : 3381785,
"Longitude" : -11792657, "update" : true, "WebLabel" : "
Stop : SPRINGHILL SUITES (4003)
ROUTE 11
Next Arrival (Bus:1216) 2:58 PM Jan 15th
", "PredictionTimes" : {"shelterPred400311-
1452699285377" :1452898710000}}}, {"Shelter" : {"routeLogNumbers" :
[10], "minor" : false, "majorRoutes" : [10], "ShelterId" : 4002,
"ShelterName" : "AMERICAS BEST VALUE INN", "Latitude" : 3381797,
"Longitude" : -11791379, "update" : true, "WebLabel" : "
Stop : AMERICAS BEST VALUE INN (4002)
ROUTE 10
Next Arrival (Bus:1106) 2:59 PM Jan 15th
", "PredictionTimes" : {"shelterPred400210-
1452699285421" :1452898769000}}}, {"Shelter" : {"routeLogNumbers" :
[6], "minor" : false, "majorRoutes" : [6], "ShelterId" : 4013,
"ShelterName" : "ABV FANTASY INN", "Latitude" : 3380346, "Longitude" :
-11791303, "update" : true, "WebLabel" : "
Stop : ABV FANTASY INN (4013)
ROUTE 6
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [17],
"minor" : false, "majorRoutes" : [17], "ShelterId" : 4012,
"ShelterName" : "ANAHEIM CANYON METROLINK STATION", "Latitude" :
3385486, "Longitude" : -11783989, "update" : true, "WebLabel" : "
Stop : ANAHEIM CANYON METROLINK STATION (4012)
ROUTE 17 - OB
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [15],
"minor" : false, "majorRoutes" : [15], "ShelterId" : 4015,
"ShelterName" : "GARDENWALK", "Latitude" : 3380347, "Longitude" : -
11791075, "update" : true, "WebLabel" : "
Stop : GARDENWALK (4015)
ROUTE 15
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [6],
"minor" : false, "majorRoutes" : [6], "ShelterId" : 4014,
"ShelterName" : "RAMADA PLAZA", "Latitude" : 3380350, "Longitude" : -
11791411, "update" : true, "WebLabel" : "
Stop : RAMADA PLAZA (4014)
ROUTE 6
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [17],
"minor" : false, "majorRoutes" : [17], "ShelterId" : 4009,
"ShelterName" : "ANAHEIM MAINTENANCE FACILITY - OB", "Latitude" :
3382440, "Longitude" : -11790481, "update" : true, "WebLabel" : "
Stop : ANAHEIM MAINTENANCE FACILITY - OB (4009)
ROUTE 17 - OB
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [17],
"minor" : false, "majorRoutes" : [17], "ShelterId" : 4008,
"ShelterName" : "STATE COLLEGE & LA PALMA - IB", "Latitude" : 3384740,
"Longitude" : -11788991, "update" : true, "WebLabel" : "
Stop : STATE COLLEGE & LA PALMA - IB (4008)
ROUTE 17 - IB
- Waiting for prediction(s) -
```

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", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [17],
"minor" : false, "majorRoutes" : [17], "ShelterId" : 4011,
"ShelterName" : "KAISER HOSPITAL - OB", "Latitude" : 3385321,
"Longitude" : -11784453, "update" : true, "WebLabel" : "
Stop : KAISER HOSPITAL - OB (4011)
ROUTE 17 - OB
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [17],
"minor" : false, "majorRoutes" : [17], "ShelterId" : 4010,
"ShelterName" : "ANAHEIM POLICE DEPARTMENT - OB", "Latitude" : 3383017,
"Longitude" : -11791815, "update" : true, "WebLabel" : "
Stop : ANAHEIM POLICE DEPARTMENT - OB (4010)
ROUTE 17 - OB
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [14],
"minor" : false, "majorRoutes" : [14], "ShelterId" : 4016,
"ShelterName" : "AYERS INN ORANGE", "Latitude" : 3378928, "Longitude" :
-11789131, "update" : true, "WebLabel" : "
Stop : AYERS INN ORANGE (4016)
ROUTE 14
Next Arrival (Bus:1108) 3:12 PM Jan 15th
", "PredictionTimes" : {"shelterPred401614-
1452699285435" :1452899554000}}}, {"Shelter" : {"routeLogNumbers" :
[15,31], "minor" : false, "majorRoutes" : [15,31], "ShelterId" : 4017,
"ShelterName" : "STADIUM CROSSINGS E/B", "Latitude" : 3380321,
"Longitude" : -11788883, "update" : true, "WebLabel" : "
Stop : STADIUM CROSSINGS E/B (4017)
ROUTE 15
Next Arrival (Bus:1211) 3:06 PM Jan 15th
DUCKS EXPRESS
- Waiting for prediction(s) -
", "PredictionTimes" : {"shelterPred401715-
1452699285411" :1452899206000}}}, {"Shelter" : {"routeLogNumbers" :
[31], "minor" : false, "majorRoutes" : [31], "ShelterId" : 3018,
"ShelterName" : "HONDA CENTER", "Latitude" : 3380880, "Longitude" : -
11787577, "update" : true, "WebLabel" : "
Stop : HONDA CENTER (3018)
DUCKS EXPRESS
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [151],
"minor" : false, "majorRoutes" : [151], "ShelterId" : 3017,
"ShelterName" : "ARENA CORPORATE BUILDING", "Latitude" : 3381046,
"Longitude" : -11787759, "update" : true, "WebLabel" : "
Stop : ARENA CORPORATE BUILDING (3017)
ROUTE 15A
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [8],
"minor" : false, "majorRoutes" : [8], "ShelterId" : 3016,
"ShelterName" : "MOTEL 6", "Latitude" : 3380598, "Longitude" : -
11790825, "update" : true, "WebLabel" : "
Stop : MOTEL 6 (3016)
ROUTE 8
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [7],
"minor" : false, "majorRoutes" : [7], "ShelterId" : 3011,
"ShelterName" : "HOWARD JOHNSON", "Latitude" : 3381271, "Longitude" : -
11791389, "update" : true, "WebLabel" : "

```

Stop : HOWARD JOHNSON (3011)
ROUTE 7
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [17],
"minor" : false, "majorRoutes" : [17], "ShelterId" : 3010,
"ShelterName" : "ANAHEIM CITY HALL - OB", "Latitude" : 3383494,
"Longitude" : -11791349, "update" : true, "WebLabel" : "
Stop : ANAHEIM CITY HALL - OB (3010)
ROUTE 17 - OB
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [9,18],
"minor" : false, "majorRoutes" : [9,18], "ShelterId" : 3009,
"ShelterName" : "HARBOR & KATELLA", "Latitude" : 3380380, "Longitude" :
-11791513, "update" : true, "WebLabel" : "
Stop : HARBOR & KATELLA (3009)
ROUTE 9
- Waiting for prediction(s) -
ROUTE 18
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [11],
"minor" : false, "majorRoutes" : [11], "ShelterId" : 3008,
"ShelterName" : "HOLIDAY INN HOTEL & SUITES", "Latitude" : 3381682,
"Longitude" : -11792815, "update" : true, "WebLabel" : "
Stop : HOLIDAY INN HOTEL & SUITES (3008)
ROUTE 11
Next Arrival (Bus:1216) 2:55 PM Jan 15th
", "PredictionTimes" : {"shelterPred300811-
1452699285380" :1452898523000}}}, {"Shelter" : {"routeLogNumbers" :
[8,30,31], "minor" : false, "majorRoutes" : [8,30,31], "ShelterId" :
3015, "ShelterName" : "GARDENWALK", "Latitude" : 3380347, "Longitude" :
-11791071, "update" : true, "WebLabel" : "
Stop : GARDENWALK (3015)
ROUTE 8
- Waiting for prediction(s) -
ANGELS EXPRESS
- Waiting for prediction(s) -
DUCKS EXPRESS
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [8],
"minor" : false, "majorRoutes" : [8], "ShelterId" : 3014,
"ShelterName" : "WORLDMARK ANAHEIM", "Latitude" : 3380437,
"Longitude" : -11790819, "update" : true, "WebLabel" : "
Stop : WORLDMARK ANAHEIM (3014)
ROUTE 8
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [6],
"minor" : false, "majorRoutes" : [6], "ShelterId" : 3013,
"ShelterName" : "PEACOCK SUITES", "Latitude" : 3380492, "Longitude" : -
11790665, "update" : true, "WebLabel" : "
Stop : PEACOCK SUITES (3013)
ROUTE 6
Next Arrival (Bus:1207) 3:12 PM Jan 15th
", "PredictionTimes" : {"shelterPred30136-
1452699285381" :1452899537000}}}, {"Shelter" : {"routeLogNumbers" :
[21], "minor" : false, "majorRoutes" : [21], "ShelterId" : 5019,
"ShelterName" : "EMBASSY SUITES NORTH", "Latitude" : 3384681,
"Longitude" : -11785265, "update" : true, "WebLabel" : "

Stop : EMBASSY SUITES NORTH (5019)
ROUTE 21
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" :
[15,151], "minor" : false, "majorRoutes" : [15,151], "ShelterId" :
5018, "ShelterName" : "STADIUM CROSSINGS W/B", "Latitude" : 3380347,
"Longitude" : -11788855, "update" : true, "WebLabel" : "
Stop : STADIUM CROSSINGS W/B (5018)
ROUTE 15
Next Arrival (Bus:1211) 3:15 PM Jan 15th
ROUTE 15A
- Waiting for prediction(s) -
", "PredictionTimes" : {"shelterPred501815-
1452699285415" :1452899754000}}}, {"Shelter" : {"routeLogNumbers" :
[14], "minor" : false, "majorRoutes" : [14], "ShelterId" : 5017,
"ShelterName" : "EMBASSY SUITES", "Latitude" : 3379417, "Longitude" : -
11789009, "update" : true, "WebLabel" : "
Stop : EMBASSY SUITES (5017)
ROUTE 14
Next Arrival (Bus:1108) 3:07 PM Jan 15th
", "PredictionTimes" : {"shelterPred501714-
1452699285434" :1452899264000}}}, {"Shelter" : {"routeLogNumbers" :
[8], "minor" : false, "majorRoutes" : [8], "ShelterId" : 5016,
"ShelterName" : "QUALITY INN & SUITES", "Latitude" : 3381190,
"Longitude" : -11791233, "update" : true, "WebLabel" : "
Stop : QUALITY INN & SUITES (5016)
ROUTE 8
Next Arrival (Bus:1208) 2:59 PM Jan 15th
", "PredictionTimes" : {"shelterPred50168-
1452699285383" :1452898784000}}}, {"Shelter" : {"routeLogNumbers" :
[18], "minor" : false, "majorRoutes" : [18], "ShelterId" : 5015,
"ShelterName" : "LINCOLN & EUCLID", "Latitude" : 3383235, "Longitude" :
-11794117, "update" : true, "WebLabel" : "
Stop : LINCOLN & EUCLID (5015)
ROUTE 18
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [18],
"minor" : false, "majorRoutes" : [18], "ShelterId" : 5013,
"ShelterName" : "DAD MILLER GOLF COURSE", "Latitude" : 3383962,
"Longitude" : -11796801, "update" : true, "WebLabel" : "
Stop : DAD MILLER GOLF COURSE (5013)
ROUTE 18
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [17],
"minor" : false, "majorRoutes" : [17], "ShelterId" : 5012,
"ShelterName" : "STATE COLLEGE & LA PALMA - OB", "Latitude" : 3384717,
"Longitude" : -11788879, "update" : true, "WebLabel" : "
Stop : STATE COLLEGE & LA PALMA - OB (5012)
ROUTE 17 - OB
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [17],
"minor" : false, "majorRoutes" : [17], "ShelterId" : 5011,
"ShelterName" : "ANAHEIM MAINTENANCE FACILITY - IB", "Latitude" :
3382432, "Longitude" : -11790461, "update" : true, "WebLabel" : "
Stop : ANAHEIM MAINTENANCE FACILITY - IB (5011)
ROUTE 17 - IB
- Waiting for prediction(s) -

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", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [18],
"minor" : false, "majorRoutes" : [18], "ShelterId" : 2016,
"ShelterName" : "BEACH BLVD", "Latitude" : 3385126, "Longitude" : -
11799819, "update" : true, "WebLabel" : "
Stop : BEACH BLVD (2016)
ROUTE 18
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [9],
"minor" : false, "majorRoutes" : [9], "ShelterId" : 5004,
"ShelterName" : "CONVENTION CENTER ARENA", "Latitude" : 3380315,
"Longitude" : -11791967, "update" : true, "WebLabel" : "
Stop : CONVENTION CENTER ARENA (5004)
ROUTE 9
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [7],
"minor" : false, "majorRoutes" : [7], "ShelterId" : 2019,
"ShelterName" : "ISLANDER INN", "Latitude" : 3380321, "Longitude" : -
11791321, "update" : true, "WebLabel" : "
Stop : ISLANDER INN (2019)
ROUTE 7
Next Arrival (Bus:1206) 3:00 PM Jan 15th
", "PredictionTimes" : {"shelterPred20197-
1452699285384" :1452898851000}}}, {"Shelter" : {"routeLogNumbers" :
[10], "minor" : false, "majorRoutes" : [10], "ShelterId" : 5005,
"ShelterName" : "MUZEO", "Latitude" : 3383263, "Longitude" : -11791701,
"update" : true, "WebLabel" : "
Stop : MUZEO (5005)
ROUTE 10
Next Arrival (Bus:1106) 3:08 PM Jan 15th
", "PredictionTimes" : {"shelterPred500510-
1452699285422" :1452899321000}}}, {"Shelter" : {"routeLogNumbers" :
[6], "minor" : false, "majorRoutes" : [6], "ShelterId" : 2018,
"ShelterName" : "ANAHEIM RESORT RV PARK", "Latitude" : 3381245,
"Longitude" : -11790775, "update" : true, "WebLabel" : "
Stop : ANAHEIM RESORT RV PARK (2018)
ROUTE 6
Next Arrival (Bus:1207) 3:07 PM Jan 15th
", "PredictionTimes" : {"shelterPred20186-
1452699285385" :1452899225000}}}, {"Shelter" : {"routeLogNumbers" :
[9], "minor" : false, "majorRoutes" : [9], "ShelterId" : 5002,
"ShelterName" : "BW STOVALLS INN", "Latitude" : 3380314, "Longitude" :
-11792459, "update" : true, "WebLabel" : "
Stop : BW STOVALLS INN (5002)
ROUTE 9
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [7],
"minor" : false, "majorRoutes" : [7], "ShelterId" : 2021,
"ShelterName" : "RESIDENCE INN MAINGATE", "Latitude" : 3380532,
"Longitude" : -11790941, "update" : true, "WebLabel" : "
Stop : RESIDENCE INN MAINGATE (2021)
ROUTE 7
Next Arrival (Bus:1206) 3:10 PM Jan 15th
", "PredictionTimes" : {"shelterPred20217-
1452699285386" :1452899400000}}}, {"Shelter" : {"routeLogNumbers" :
[9], "minor" : false, "majorRoutes" : [9], "ShelterId" : 5003,
"ShelterName" : "ANABELLA HOTEL", "Latitude" : 3380315, "Longitude" : -
11792359, "update" : true, "WebLabel" : "

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Stop : ANABELLA HOTEL (5003)
ROUTE 9
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [7],
"minor" : false, "majorRoutes" : [7], "ShelterId" : 2020,
"ShelterName" : "LA QUINTA INN", "Latitude" : 3380462, "Longitude" : -
11790973, "update" : true, "WebLabel" : "
Stop : LA QUINTA INN (2020)
ROUTE 7
Next Arrival (Bus:1206) 3:07 PM Jan 15th
", "PredictionTimes" : {"shelterPred20207-
1452699285387" :1452899222000}}}, {"Shelter" : {"routeLogNumbers" :
[16], "minor" : false, "majorRoutes" : [16], "ShelterId" : 2023,
"ShelterName" : "BEST WESTERN MERIDIAN", "Latitude" : 3377588,
"Longitude" : -11789087, "update" : true, "WebLabel" : "
Stop : BEST WESTERN MERIDIAN (2023)
ROUTE 16
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [9],
"minor" : false, "majorRoutes" : [9], "ShelterId" : 5001,
"ShelterName" : "BW PAVILLIONS", "Latitude" : 3380314, "Longitude" : -
11792723, "update" : true, "WebLabel" : "
Stop : BW PAVILLIONS (5001)
ROUTE 9
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [16],
"minor" : false, "majorRoutes" : [16], "ShelterId" : 2022,
"ShelterName" : "OUTLETS AT ORANGE", "Latitude" : 3378509,
"Longitude" : -11789293, "update" : true, "WebLabel" : "
Stop : OUTLETS AT ORANGE (2022)
ROUTE 16
Next Arrival (Bus:1102) 3:08 PM Jan 15th
", "PredictionTimes" : {"shelterPred202216-
1452699285423" :1452899327000}}}, {"Shelter" : {"routeLogNumbers" :
[16], "minor" : false, "majorRoutes" : [16], "ShelterId" : 2025,
"ShelterName" : "HOLIDAY INN EXPRESS", "Latitude" : 3377473,
"Longitude" : -11790819, "update" : true, "WebLabel" : "
Stop : HOLIDAY INN EXPRESS (2025)
ROUTE 16
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [15],
"minor" : false, "majorRoutes" : [15], "ShelterId" : 2024,
"ShelterName" : "AYRES HOTEL ANAHEIM", "Latitude" : 3380564,
"Longitude" : -11787815, "update" : true, "WebLabel" : "
Stop : AYRES HOTEL ANAHEIM (2024)
ROUTE 15
Next Arrival (Bus:1211) 3:14 PM Jan 15th
", "PredictionTimes" : {"shelterPred202415-
1452699285414" :1452899694000}}}, {"Shelter" : {"routeLogNumbers" :
[19], "minor" : false, "majorRoutes" : [19], "ShelterId" : 2027,
"ShelterName" : "DISCOVERY SCIENCE CENTER", "Latitude" : 3377084,
"Longitude" : -11786747, "update" : true, "WebLabel" : "
Stop : DISCOVERY SCIENCE CENTER (2027)
ROUTE 19
Next Arrival (Bus:1215) 3:02 PM Jan 15th
", "PredictionTimes" : {"shelterPred202719-
1452699285388" :1452898956000}}}, {"Shelter" : {"routeLogNumbers" :

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[19], "minor" : false, "majorRoutes" : [19], "ShelterId" : 2026,
"ShelterName" : "MAINPLACE MALL", "Latitude" : 3377476, "Longitude" : -
11787105, "update" : true, "WebLabel" : "
Stop : MAINPLACE MALL (2026)
ROUTE 19
Next Arrival (Bus:1215) 3:00 PM Jan 15th
", "PredictionTimes" : {"shelterPred202619-
1452699285389" :1452898807000}}}, {"Shelter" : {"routeLogNumbers" :
[19], "minor" : false, "majorRoutes" : [19], "ShelterId" : 2029,
"ShelterName" : "DOWNTOWN SANTA ANA: 4TH & SPURGEON", "Latitude" :
3374800, "Longitude" : -11786569, "update" : true, "WebLabel" : "
Stop : DOWNTOWN SANTA ANA: 4TH & SPURGEON (2029)
ROUTE 19
Next Arrival (Bus:1215) 3:05 PM Jan 15th
", "PredictionTimes" : {"shelterPred202919-
1452699285390" :1452899132000}}}, {"Shelter" : {"routeLogNumbers" :
[19], "minor" : false, "majorRoutes" : [19], "ShelterId" : 2028,
"ShelterName" : "BOWERS MUSEUM", "Latitude" : 3376231, "Longitude" : -
11786761, "update" : true, "WebLabel" : "
Stop : BOWERS MUSEUM (2028)
ROUTE 19
Next Arrival (Bus:1215) 3:04 PM Jan 15th
", "PredictionTimes" : {"shelterPred202819-
1452699285391" :1452899072000}}}, {"Shelter" : {"routeLogNumbers" :
[19], "minor" : false, "majorRoutes" : [19], "ShelterId" : 2030,
"ShelterName" : "DOWNTOWN SANTA ANA: 2ND STREET & BROADWAY",
"Latitude" : 3374601, "Longitude" : -11786969, "update" : true,
"WebLabel" : "
Stop : DOWNTOWN SANTA ANA: 2ND STREET & BROADWAY (2030)
ROUTE 19
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" :
[1,2,15], "minor" : false, "majorRoutes" : [1,2,15], "ShelterId" :
2002, "ShelterName" : "CONVENTION WAY S/B", "Latitude" : 3379904,
"Longitude" : -11791537, "update" : true, "WebLabel" : "
Stop : CONVENTION WAY S/B (2002)
ROUTE 1
Next Arrival (Bus:2152) 2:55 PM Jan 15th
ROUTE 2
Next Arrival (Bus:1219) 3:09 PM Jan 15th
ROUTE 15
Next Arrival (Bus:1211) 2:56 PM Jan 15th
", "PredictionTimes" : {"shelterPred20021-
1452699285408" :1452898524000,"shelterPred20022-
1452699285409" :1452899396000,"shelterPred200215-
1452699285410" :1452898589000}}}, {"Shelter" : {"routeLogNumbers" :
[1,2], "minor" : false, "majorRoutes" : [1,2], "ShelterId" : 2003,
"ShelterName" : "DOUBLETREE", "Latitude" : 3379687, "Longitude" : -
11791525, "update" : true, "WebLabel" : "
Stop : DOUBLETREE (2003)
ROUTE 1
Next Arrival (Bus:2152) 2:56 PM Jan 15th
ROUTE 2
Next Arrival (Bus:1219) 3:11 PM Jan 15th
", "PredictionTimes" : {"shelterPred20031-
1452699285395" :1452898585000,"shelterPred20032-
1452699285396" :1452899474000}}}, {"Shelter" : {"routeLogNumbers" :
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[18], "minor" : false, "majorRoutes" : [18], "ShelterId" : 2000,
"ShelterName" : "KNOTTS BERRY FARM", "Latitude" : 3384096,
"Longitude" : -11799801, "update" : true, "WebLabel" : "
Stop : KNOTTS BERRY FARM (2000)
ROUTE 18
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" :
[1,3,18,19], "minor" : false, "majorRoutes" : [1,3,18,19],
"ShelterId" : 2001, "ShelterName" : "PORTOFINO", "Latitude" : 3380284,
"Longitude" : -11791547, "update" : true, "WebLabel" : "
Stop : PORTOFINO (2001)
ROUTE 1
Next Arrival (Bus:2152)    2:52 PM Jan 15th
ROUTE 3
Next Arrival (Bus:2158)    3:00 PM Jan 15th
ROUTE 18
- Waiting for prediction(s) -
ROUTE 19
Next Arrival (Bus:1215)    2:55 PM Jan 15th
", "PredictionTimes" : {"shelterPred20011-
1452699285397" :1452898377000,"shelterPred20013-
1452699285398" :1452898810000,"shelterPred200119-
1452699285399" :1452898553000}}}, {"Shelter" : {"routeLogNumbers" :
[3], "minor" : false, "majorRoutes" : [3], "ShelterId" : 2006,
"ShelterName" : "SHERATON PARK", "Latitude" : 3380078, "Longitude" : -
11791561, "update" : true, "WebLabel" : "
Stop : SHERATON PARK (2006)
ROUTE 3
Next Arrival (Bus:2158)    3:01 PM Jan 15th
", "PredictionTimes" : {"shelterPred20063-
1452699285400" :1452898877000}}}, {"Shelter" : {"routeLogNumbers" :
[3], "minor" : false, "majorRoutes" : [3], "ShelterId" : 2007,
"ShelterName" : "CLARION", "Latitude" : 3379961, "Longitude" : -
11791627, "update" : true, "WebLabel" : "
Stop : CLARION (2007)
ROUTE 3
Next Arrival (Bus:2158)    3:03 PM Jan 15th
", "PredictionTimes" : {"shelterPred20073-
1452699285401" :1452899028000}}}, {"Shelter" : {"routeLogNumbers" :
[1,2], "minor" : false, "majorRoutes" : [1,2], "ShelterId" : 2004,
"ShelterName" : "STANFORD INN & SUITES", "Latitude" : 3379392,
"Longitude" : -11791516, "update" : true, "WebLabel" : "
Stop : STANFORD INN & SUITES (2004)
ROUTE 1
Next Arrival (Bus:2152)    2:57 PM Jan 15th
ROUTE 2
- Waiting for prediction(s) -
", "PredictionTimes" : {"shelterPred20041-
1452699285402" :1452898679000}}}, {"Shelter" : {"routeLogNumbers" :
[1], "minor" : false, "majorRoutes" : [1], "ShelterId" : 2005,
"ShelterName" : "TARGET S/B", "Latitude" : 3378829, "Longitude" : -
11791505, "update" : true, "WebLabel" : "
Stop : TARGET S/B (2005)
ROUTE 1
Next Arrival (Bus:2152)    2:59 PM Jan 15th
", "PredictionTimes" : {"shelterPred20051-
1452699285403" :1452898795000}}}, {"Shelter" : {"routeLogNumbers" :
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[12,19], "minor" : false, "majorRoutes" : [12,19], "ShelterId" : 2010,
"ShelterName" : "HOLIDAY INN ANAHEIM", "Latitude" : 3380034,
"Longitude" : -11790063, "update" : true, "WebLabel" : "
Stop : HOLIDAY INN ANAHEIM (2010)
ROUTE 12
- Waiting for prediction(s) -
ROUTE 19
Next Arrival (Bus:1215) 2:59 PM Jan 15th
", "PredictionTimes" : {"shelterPred201019-
1452699285404" :1452898747000}}}, {"Shelter" : {"routeLogNumbers" :
[12], "minor" : false, "majorRoutes" : [12], "ShelterId" : 2011,
"ShelterName" : "ANAHEIM GRAY LINE", "Latitude" : 3379855,
"Longitude" : -11789837, "update" : true, "WebLabel" : "
Stop : ANAHEIM GRAY LINE (2011)
ROUTE 12
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" :
[4,5,18,19,30,31], "minor" : false, "majorRoutes" : [4,5,18,19,30,31],
"ShelterId" : 2008, "ShelterName" : "GRAND PLAZA", "Latitude" :
3379964, "Longitude" : -11791781, "update" : true, "WebLabel" : "
Stop : GRAND PLAZA (2008)
ROUTE 4
Next Arrival (Bus:1221) 2:53 PM Jan 15th
ROUTE 5
Next Arrival (Bus:1220) 3:09 PM Jan 15th
ROUTE 18
- Waiting for prediction(s) -
ROUTE 19
Next Arrival (Bus:1215) 2:58 PM Jan 15th
ANGELS EXPRESS
- Waiting for prediction(s) -
DUCKS EXPRESS
- Waiting for prediction(s) -
", "PredictionTimes" : {"shelterPred20084-
1452699285405" :1452898396000,"shelterPred20085-
1452699285406" :1452899340000,"shelterPred200819-
1452699285407" :1452898687000}}}, {"Shelter" : {"routeLogNumbers" :
[12,14,16,20], "minor" : false, "majorRoutes" : [12,14,16,20],
"ShelterId" : 2009, "ShelterName" : "GARDENWALK ON DISNEY WAY",
"Latitude" : 3380681, "Longitude" : -11791189, "update" : true,
"WebLabel" : "
Stop : GARDENWALK ON DISNEY WAY (2009)
ROUTE 12
Next Arrival (Bus:2161) 3:06 PM Jan 15th
ROUTE 14
- Waiting for prediction(s) -
ROUTE 16
Next Arrival (Bus:1102) 3:02 PM Jan 15th
ROUTE 20
- Waiting for prediction(s) -
", "PredictionTimes" : {"shelterPred200912-
1452699285424" :1452899164000,"shelterPred200916-
1452699285425" :1452898933000}}}, {"Shelter" : {"routeLogNumbers" :
[17], "minor" : false, "majorRoutes" : [17], "ShelterId" : 2014,
"ShelterName" : "ANAHEIM CITY HALL - IB", "Latitude" : 3383478,
"Longitude" : -11791369, "update" : true, "WebLabel" : "
Stop : ANAHEIM CITY HALL - IB (2014)

```

ROUTE 17 - IB
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [17],
"minor" : false, "majorRoutes" : [17], "ShelterId" : 2015,
"ShelterName" : "ANAHEIM POLICE DEPARTMENT - IB", "Latitude" : 3383176,
"Longitude" : -11791891, "update" : true, "WebLabel" : "
Stop : ANAHEIM POLICE DEPARTMENT - IB (2015)
ROUTE 17 - IB
- Waiting for prediction(s) -
", "PredictionTimes" : {}}, {"Shelter" : {"routeLogNumbers" : [10],
"minor" : false, "majorRoutes" : [10], "ShelterId" : 2012,
"ShelterName" : "RAMADA LIMITED MAINGATE", "Latitude" : 3382147,
"Longitude" : -11791555, "update" : true, "WebLabel" : "
Stop : RAMADA LIMITED MAINGATE (2012)

ROUTE 10
Next Arrival (Bus:1106) 3:12 PM Jan 15th
", "PredictionTimes" : {"shelterPred201210-
1452699285426" :1452899540000}}}, {"Shelter" : {"routeLogNumbers" :
[10], "minor" : false, "majorRoutes" : [10], "ShelterId" : 2013,
"ShelterName" : "HARBOR RV PARK", "Latitude" : 3381879, "Longitude" : -
11791537, "update" : true, "WebLabel" : "
Stop : HARBOR RV PARK (2013)
ROUTE 10
Next Arrival (Bus:1106) 3:13 PM Jan 15th
", "PredictionTimes" : {"shelterPred201310-
1452699285427" :1452899587000}}}], "lastUpdateTime" : 1452898372981}

```

In response to /art/packet/json/routelayer

```

{RouteLayerArray:[{"RouteLayer" : {"RouteID" : 1, "Name" : "ROUTE 1",
"LogNum" : 1, "ColorRoute" : "45a9e0", "ColorVeh" : 14723397,
"PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 2,
"Name" : "ROUTE 2", "LogNum" : 2, "ColorRoute" : "bdd030", "ColorVeh" :
3199165, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" :
{"RouteID" : 3, "Name" : "ROUTE 3", "LogNum" : 3, "ColorRoute" :
"a183bc", "ColorVeh" : 12354465, "PolyLines" : [], "LayerArray":[]}},
{"RouteLayer" : {"RouteID" : 4, "Name" : "ROUTE 4", "LogNum" : 4,
"ColorRoute" : "da77b0", "ColorVeh" : 11565018, "PolyLines" : [],
"LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 5, "Name" : "ROUTE 5",
"LogNum" : 5, "ColorRoute" : "20409a", "ColorVeh" : 10108960,
"PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 6,
"Name" : "ROUTE 6", "LogNum" : 6, "ColorRoute" : "2aa4b0", "ColorVeh" :
11576362, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" :
{"RouteID" : 7, "Name" : "ROUTE 7", "LogNum" : 7, "ColorRoute" :
"eb1d24", "ColorVeh" : 2366955, "PolyLines" : [], "LayerArray":[]}},
{"RouteLayer" : {"RouteID" : 8, "Name" : "ROUTE 8", "LogNum" : 8,
"ColorRoute" : "116a48", "ColorVeh" : 4745745, "PolyLines" : [],
"LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 9, "Name" : "ROUTE 9",
"LogNum" : 9, "ColorRoute" : "8da6d5", "ColorVeh" : 14001805,
"PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 10,
"Name" : "ROUTE 10", "LogNum" : 10, "ColorRoute" : "f89938",
"ColorVeh" : 3709432, "PolyLines" : [], "LayerArray":[]}},
{"RouteLayer" : {"RouteID" : 11, "Name" : "ROUTE 11", "LogNum" : 11,
"ColorRoute" : "f47727", "ColorVeh" : 2586612, "PolyLines" : [],
"LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 12, "Name" : "ROUTE

```

```
12", "LogNum" : 12, "ColorRoute" : "1eb163", "ColorVeh" : 6533406,
"PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 14,
"Name" : "ROUTE 14", "LogNum" : 14, "ColorRoute" : "f58a79",
"ColorVeh" : 7965429, "PolyLines" : [], "LayerArray":[]}},
{"RouteLayer" : {"RouteID" : 15, "Name" : "ROUTE 15", "LogNum" : 15,
"ColorRoute" : "395783", "ColorVeh" : 8607545, "PolyLines" : [],
"LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 17, "Name" : "ROUTE
17", "LogNum" : 17, "ColorRoute" : "00ccff", "ColorVeh" : 16763904,
"PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 16,
"Name" : "ROUTE 16", "LogNum" : 16, "ColorRoute" : "395783",
"ColorVeh" : 8607545, "PolyLines" : [], "LayerArray":[]}},
{"RouteLayer" : {"RouteID" : 19, "Name" : "ROUTE 19", "LogNum" : 19,
"ColorRoute" : "117ca4", "ColorVeh" : 10779665, "PolyLines" : [],
"LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 18, "Name" : "ROUTE
18", "LogNum" : 18, "ColorRoute" : "c85d28", "ColorVeh" : 2645448,
"PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 21,
"Name" : "ROUTE 21", "LogNum" : 21, "ColorRoute" : "ff99cc",
"ColorVeh" : 13408767, "PolyLines" : [], "LayerArray":[]}},
{"RouteLayer" : {"RouteID" : 20, "Name" : "ROUTE 20", "LogNum" : 20,
"ColorRoute" : "881950", "ColorVeh" : 5249416, "PolyLines" : [],
"LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 22, "Name" : "ROUTE
22", "LogNum" : 22, "ColorRoute" : "ff0066", "ColorVeh" : 6684927,
"PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 31,
"Name" : "DUCKS EXPRESS", "LogNum" : 31, "ColorRoute" : "666666",
"ColorVeh" : 6710886, "PolyLines" : [], "LayerArray":[]}},
{"RouteLayer" : {"RouteID" : 30, "Name" : "ANGELS EXPRESS", "LogNum" :
30, "ColorRoute" : "663300", "ColorVeh" : 13158, "PolyLines" : [],
"LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 151, "Name" : "ROUTE
15A", "LogNum" : 151, "ColorRoute" : "395783", "ColorVeh" : 8607545,
"PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 4506,
"Name" : "ROUTE 4, 5 & 6", "LogNum" : 4506, "ColorRoute" : "000000",
"ColorVeh" : 0, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" :
{"RouteID" : 4050, "Name" : "ROUTE 4 & 5", "LogNum" : 4050,
"ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [],
"LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 191, "Name" : "ROUTE 19
IB", "LogNum" : 191, "ColorRoute" : "000000", "ColorVeh" : 0,
"PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 4060,
"Name" : "ROUTE 4 & 6", "LogNum" : 4060, "ColorRoute" : "000000",
"ColorVeh" : 0, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" :
{"RouteID" : 181, "Name" : "ROUTE 18 IB", "LogNum" : 181,
"ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [],
"LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 70, "Name" : "AMTRAK
EXPRESS", "LogNum" : 70, "ColorRoute" : "000000", "ColorVeh" : 0,
"PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 1008,
"Name" : "SIGN ONLY - LINE G", "LogNum" : 1008, "ColorRoute" :
"9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}},
{"RouteLayer" : {"RouteID" : 1009, "Name" : "SIGN ONLY - LINE D",
"LogNum" : 1009, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915,
"PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 1010,
"Name" : "SIGN ONLY - SPECIAL ROUTE 1", "LogNum" : 1010, "ColorRoute" :
"9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}},
{"RouteLayer" : {"RouteID" : 1011, "Name" : "SIGN ONLY - SPECIAL ROUTE
2", "LogNum" : 1011, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915,
"PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 345,
"Name" : "SIGN ONLY - 3 4 5 GRAND PLAZA LINE, DISNEYLAND", "LogNum" :
345, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [],
"LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 1030, "Name" : "ROUTE 1
```

& 3", "LogNum" : 1030, "ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 344, "Name" : "SIGN ONLY - 1 & 2 HARBOR BLVD LINE - DISNEYLAND", "LogNum" : 344, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 1001, "Name" : "SIGN ONLY - PUMBAA TRANSPORTATION CENTER LINE", "LogNum" : 1001, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 1003, "Name" : "SIGN ONLY - CAR PARK 4 TRANSPORTATION CENTER LINE", "LogNum" : 1003, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 1002, "Name" : "SIGN ONLY - CAR PARK 1 TRANSPORTATION CENTER LINE", "LogNum" : 1002, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 1004, "Name" : "SIGN ONLY - GARDENWALK LINE", "LogNum" : 1004, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 1007, "Name" : "SIGN ONLY - LINE H", "LogNum" : 1007, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 8090, "Name" : "ROUTE 8 & 9", "LogNum" : 8090, "ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 5060, "Name" : "ROUTE 5 & 6", "LogNum" : 5060, "ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 102, "Name" : "SIGN ONLY - TEST PATTERN", "LogNum" : 102, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 103, "Name" : "SIGN ONLY - TRAINING BUS", "LogNum" : 103, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 100, "Name" : "SIGN ONLY - NOT IN SERVICE", "LogNum" : 100, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 101, "Name" : "SIGN ONLY - BLANK SIGNS", "LogNum" : 101, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 110, "Name" : "SIGN ONLY - WELCOME STAR WARS, HALF MARATHON", "LogNum" : 110, "ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 111, "Name" : "SIGN ONLY - DROP-OFF ONLY", "LogNum" : 111, "ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 108, "Name" : "SIGN ONLY - WELCOME NATURAL PRODUCTS EXPO", "LogNum" : 108, "ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 109, "Name" : "SIGN ONLY - WELCOME AVENGERS SUPER HEROES, HALF MA", "LogNum" : 109, "ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 106, "Name" : "SIGN ONLY - SORRY BUS FULL", "LogNum" : 106, "ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 107, "Name" : "SIGN ONLY - WELCOME OC AUTO SHOW", "LogNum" : 107, "ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 104, "Name" : "SIGN ONLY - SPECIAL", "LogNum" : 104, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 105, "Name" : "SIGN ONLY - WELCOME NAMM", "LogNum" : 105, "ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 119, "Name" : "SIGN ONLY - ANAHEIM CONVENTION CENTER", "LogNum" : 119, "ColorRoute" : "9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}},

```

{"RouteLayer" : {"RouteID" : 118, "Name" : "SIGN ONLY - WELCOME
BLIZZARD", "LogNum" : 118, "ColorRoute" : "000000", "ColorVeh" : 0,
"PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 117,
"Name" : "SIGN ONLY - ZAZU PARKING LOT", "LogNum" : 117, "ColorRoute" :
"9b9b9b", "ColorVeh" : 10197915, "PolyLines" : [], "LayerArray":[]}},
{"RouteLayer" : {"RouteID" : 116, "Name" : "SIGN ONLY - ANAHEIM
STADIUM", "LogNum" : 116, "ColorRoute" : "9b9b9b", "ColorVeh" :
10197915, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" :
{"RouteID" : 115, "Name" : "SIGN ONLY - MEDIA", "LogNum" : 115,
"ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [],
"LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 114, "Name" : "SIGN
ONLY - WELCOME DISNEYLAND, HALF MARATHON", "LogNum" : 114,
"ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [],
"LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 113, "Name" : "SIGN
ONLY - DISNEYLAND RESORT", "LogNum" : 113, "ColorRoute" : "000000",
"ColorVeh" : 0, "PolyLines" : [], "LayerArray":[]}}, {"RouteLayer" :
{"RouteID" : 112, "Name" : "SIGN ONLY - ANAHEIM RESORT TRANSPORTATION",
"LogNum" : 112, "ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" :
[], "LayerArray":[]}}, {"RouteLayer" : {"RouteID" : 120, "Name" : "SIGN
ONLY - WELCOME TINKERBELL, HALF MARATHON", "LogNum" : 120,
"ColorRoute" : "000000", "ColorVeh" : 0, "PolyLines" : [],
"LayerArray":[]}}]}

```

In response to [/art/packet/json/vehicle](#)

```

{"VehicleArray":[{"vehicle" : {"routeID" : 4, "patternID" : 4,
"workPieceID" : 4, "colorHexText" : "da77b0", "id" : 1221, "oos":
false, "update" : false}}, {"vehicle" : {"routeID" : 0, "patternID" :
0, "workPieceID" : 0, "colorHexText" : "c0c0c0", "id" : 1101, "oos":
false, "update" : false}}, {"vehicle" : {"routeID" : 5, "patternID" :
5, "workPieceID" : 5, "colorHexText" : "20409a", "id" : 1220, "oos":
false, "update" : false}}, {"vehicle" : {"routeID" : 0, "patternID" :
0, "workPieceID" : 0, "colorHexText" : "c0c0c0", "id" : 2808, "oos":
false, "update" : false}}, {"vehicle" : {"routeID" : 16, "patternID" :
16, "workPieceID" : 16, "colorHexText" : "395783", "id" : 1102, "oos":
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"patternID" : 1003, "workPieceID" : 1003, "colorHexText" : "9b9b9b",
"id" : 1103, "oos": false, "update" : false}}, {"vehicle" :
{"routeID" : 0, "patternID" : 0, "workPieceID" : 0, "colorHexText" :
"c0c0c0", "id" : 1217, "oos": false, "update" : false}}, {"vehicle" :
{"routeID" : 11, "patternID" : 11, "workPieceID" : 11, "colorHexText" :
"f47727", "id" : 1216, "oos": false, "update" : false}}, {"vehicle" :
{"routeID" : 100, "patternID" : 100, "workPieceID" : 100,
"colorHexText" : "9b9b9b", "id" : 1219, "oos": false, "update" :
false}}, {"vehicle" : {"routeID" : 0, "patternID" : 0, "workPieceID" :
0, "colorHexText" : "c0c0c0", "id" : 1218, "oos": false, "update" :
false}}, {"vehicle" : {"routeID" : 0, "patternID" : 0, "workPieceID" :
0, "colorHexText" : "c0c0c0", "id" : 2802, "oos": false, "update" :
false}}, {"vehicle" : {"routeID" : 0, "patternID" : 0, "workPieceID" :
0, "colorHexText" : "c0c0c0", "id" : 2803, "oos": false, "update" :
false}}, {"vehicle" : {"routeID" : 0, "patternID" : 0, "workPieceID" :
0, "colorHexText" : "c0c0c0", "id" : 2143, "oos": false, "update" :
false}}, {"vehicle" : {"routeID" : 0, "patternID" : 0, "workPieceID" :
0, "colorHexText" : "c0c0c0", "id" : 2807, "oos": false, "update" :

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