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Operator's Display Keypad (ODK4)

OPERATION AND SERVICE MANUAL
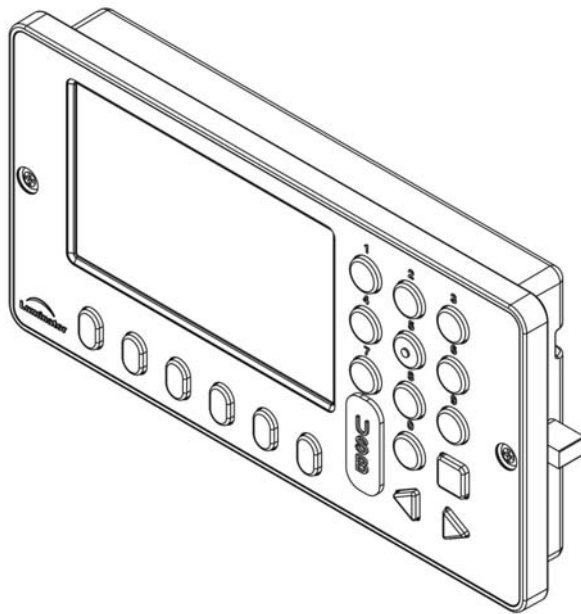
FOR QUANTUM D DIRECT LIGHTING WITH VARIABLE DIMMING

SAFETY SUMMARY

The following are general safety precautions. They do not appear anywhere else in this manual. They reflect practices that should always be applied.

KEEP AWAY FROM LIVE CIRCUITS

✓ **NOTE***: Do **not** perform maintenance or service to equipment with the power turned on. To avoid injury or possible damage to equipment always remove all power.*

✓ **NOTE***: Discharge and ground a circuit before touching it.*

✓ **NOTE:** *Observe all safety regulations.*

DO NOT SERVICE OR ADJUST ALONE

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

CAUTION
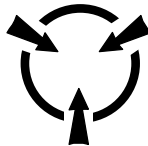
ELECTROSTATIC SENSITIVE DEVICES.

ELECTROSTATIC CHARGE PREVENTION IS RECOMMENDED. USE WRIST GROUNDING STRAP AND/OR ANTISTATIC GROUNDED FLOOR MAT WHILE HANDLING ANY PRINTED WIRING ASSEMBLY (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 FOR REPAIR AND OR REPLACEMENT.

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SECTION 1
INTRODUCTION

1.1 ODK4 Introduction (with Quantum D Direct Lighting)

The ODK4 is the fourth-generation system control, and display. It is enhanced to serve as sign system control and to interface with signs through RS-485 communications lines and provide logic and control for the Quantum D Direct Interior Lighting System.

The ODK4 is the vehicle operator's control and monitor device, through which sign system operation can be checked or changed. The ODK4 stores and issues control signals and display messages to all of the signs; it is the sign system controller. The vehicle operator uses the ODK4 to control and verify the sign system's message displays during normal operation.

The ODK4 address can be changed while it is operating so that its display shows the message on any sign. The ODK has short acknowledgement beeps; it supports beep and flash attributes as well as decimal and hex entry. The ODK4 is capable of interfacing to other on-board systems through RS232, J1708 and J1939.

Once installed, Luminator signs operate automatically. Each sign receives bi-directional communication via its Luminator Operator's Display and Keyboard (ODK). Signs are shipped ready for use; a transit authority may change messages, software, or sign location.

The ODK also interfaces to the Quantum D Direct Lighting System to control the light level of the connected light fixtures. Lighting can be controlled either by the operator or automatically based on ambient light conditions.

1.1.1 Software

There are four different software programs/files installed in the ODK4:

- Operating System (Kernel)

- Application Software (Ramdisk)

- Configuration File

- Message Listing

THE FUNCTIONS OF THE FOUR ODK SOFTWARE PROGRAMS/FILES ARE AS FOLLOWS:

Operating System - (Kernel) is programmed into the ODK4 and is similar to the Operating System in your computer.

- This software should only be replaced by Luminator factory personnel. Kernel version data is displayed momentarily when power is applied to the ODK4

Application Code - (Ramdisk) is loaded into flash memory. The application code includes all of the application modules used by the ODK4.

- Different application modules may be turned off by the Configuration File. This software should only be upgraded at the direction of Luminator personnel

- Application "SW Ver" is displayed momentarily when power is applied to the ODK

Configuration File - is loaded into ODK4 memory via a USB memory device.

- The Configuration File is created by Luminator personnel to configure specific applications and settings used by the ODK4 on a particular order

- The Configuration file may be copied from one ODK4 to another ODK4 via a USB memory device

Message Listing - contains customer route and display information. This software is maintained by the transit authority.

- New and revised listings may be loaded using either the USB memory device or the Message Transfer Unit (MTU)

- The MTU can only be used on systems with the optional MTU port. This port is a 4-pin circular plastic connector

- Refer to Sections 2 & 6 for instructions on how to load new message listings

THE FOLLOWING DIAGNOSTIC SCREENS ARE AVAILABLE WITH THE QUANTUM D DIRECT LIGHTING SYSTEM:

1.1.2 Notifications (see Section 6.4.3)

- ✓ **Note:** The "**!**" symbol inside a yellow triangle located in the upper left corner of the ODK4 display screen advises the driver or mechanic that there is a notification waiting.

- ✓ **Note:** The notification screens are password protected to avoid inadvertently clearing a notification. Notifications remain on the ODK4 screen until they are read. When reading a notification, the "**!**" symbol will clear from the ODK4 display.

- ✓ **Note:** If the "**!**" symbol comes back, then the problem still exists in the system.

- ✓ **Note:** Notifications can assist in isolating problems that happened during the daily operation of the vehicle that were not observed by the mechanic.

1.2 System Connectivity
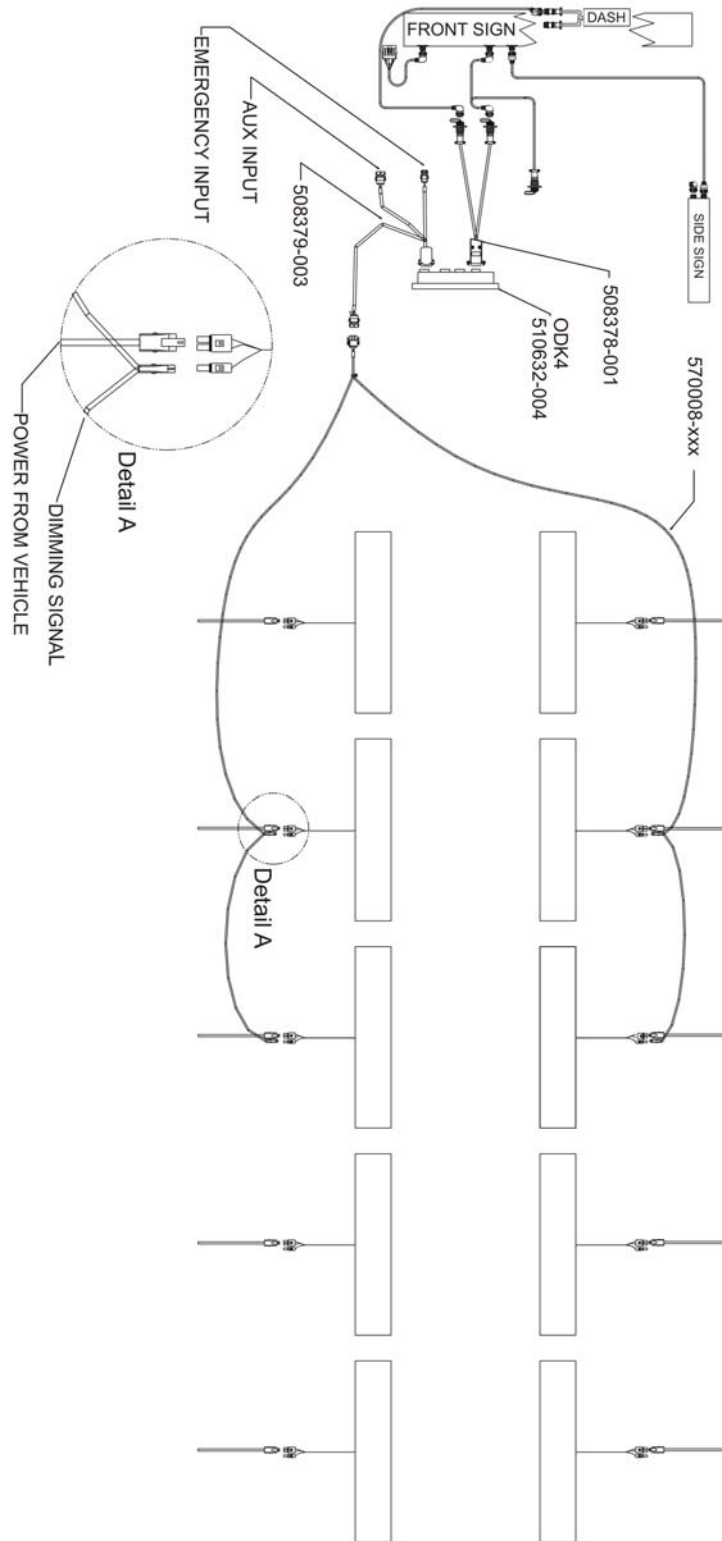
Fig. 1-1. System Layout

1.3 ODK4 Connectivity

The ODK4 is equipped with two DB-9 and two DB-15 connectors located on the back of the ODK (see Fig. 1-2):

- J1 is a 9 pin female Dsub connector and provides the sign data interface; 24V battery power; 24V switched power; and LED power

- J2 is a 9 pin male Dsub connector and provides one channel for RS485 signals; one channel for J1708; and a one channel RS232 interface (Tx and Rx only)

- J3 is a 15 pin female Dsub connector and provides one channel for J1939; one channel for Ethernet; one channel for a USB host; and one channel for a USB device.

WARNING:

Connector J3 is for future use and is not used in this system

- J4 is a 15 pin male Dsub connector and provides for an emergency switch interface; one RS485 interface for Luminator's Quantum Lighting control; one RS232 channel for ODK4 debugging; and four input/two output interfaces
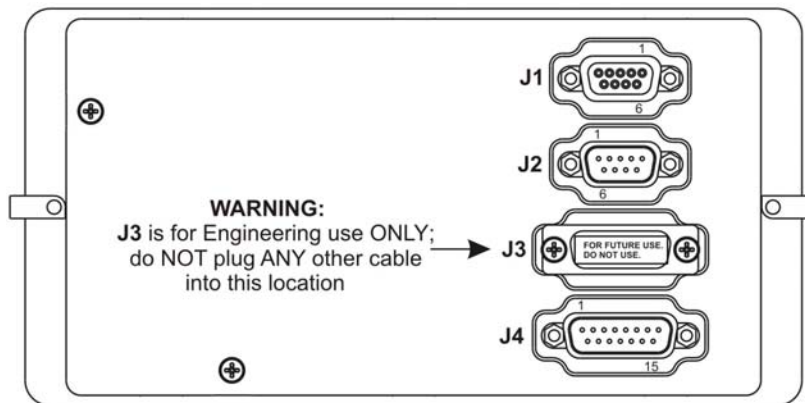
Figure 1-2. ODK4 Connectors

CONNECTOR J1	
PIN NO.	DESCRIPTION
1	24V BATTERY POWER
2	24V SWITCHED POWER
3	LED POWER
4	GROUND
5	GROUND
6	GROUND
7	SHIELD GROUND
8	GTI +
9	GTI -

510575-004

CONNECTOR J2	
PIN NO.	DESCRIPTION
1	GROUND
2	A1GIPT
3	A1GIPR
4	A1J1708+
5	GROUND
6	A1EXPS-
7	A1EXPS+
8	A1J1708-
9	GROUND

CONNECTOR J3	
PIN NO.	DESCRIPTION
1	USB_H_VBUS
2	USB_H_D+
3	USB_D_CNX
4	USB_D_D+
5	USB_D_D-
6	GROUND
7	ETHERNET-RX+
8	ETHERNET-TX+
9	GROUND
10	USB_H_D-
11	CAN_H (J1939+)
12	CAN_L (J1939-)
13	CAN_SH (J1939_SH)
14	ETHERNET-RX-
15	ETHERNET-TX-

CONNECTOR J4	
PIN NO.	DESCRIPTION
1	INPUT 1
2	INPUT 2
3	INPUT 3
4	GROUND
5	DRX
6	RX485-
7	OUTPUT 1
8	OUTPUT 2
9	EMER +
10	EMER -
11	INPUT 4
12	GROUND
13	DTX
14	RX485+
15	GROUND

1.4 Cabling – ODK4 Vehicle Interface

Operation of the ODK4 requires a special Power/Data Adaptor Cable (see Fig. 1-3) to connect with existing signs.
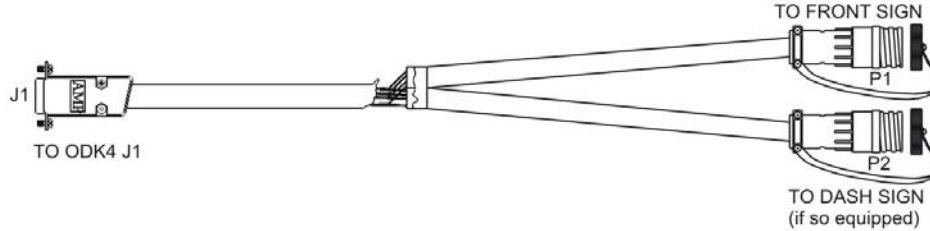
Figure 1-3. Power/Data Adaptor Cable Assembly (PN: 508378-001)

Note: For vehicles equipped with a drive-emergency/panic switch (or auxiliary inputs), an additional adaptor cable (see Fig. 1-4) will be required.
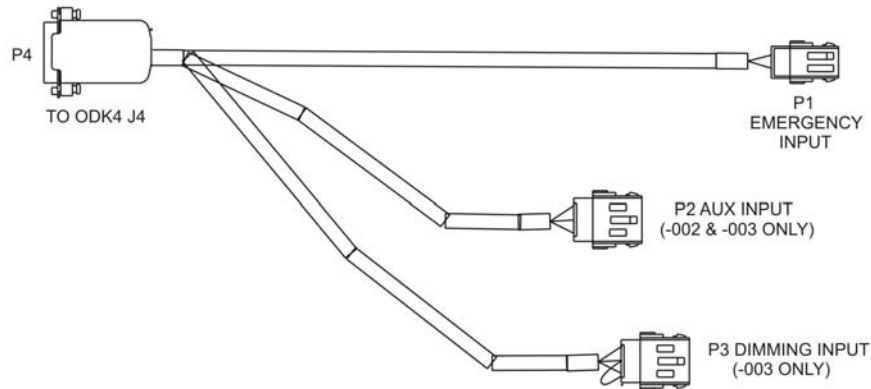
Figure 1-4. Emergency/Auxiliary Input Adaptor Cable Assembly (PN: 508379-003)

1.5 Cabling – Quantum D Variable Dimming Lighting

Operation of the ODK4 in conjunction with a variable dimming lighting system requires the above listed Power/Data Adaptor Cable Assembly - 508378-001 (Fig. 1-3), and Emergency/Auxiliary Input Adaptor Cable Assembly - 508379-003 (Fig.1-4) as well as a special dimming cable assembly connected to the specific light fixtures to be dimmed (see Fig. 1-5).

- Only fixtures connected to the dimming cable will have variable dimming. Other fixtures will have standard on/off functionality based on vehicle power input.
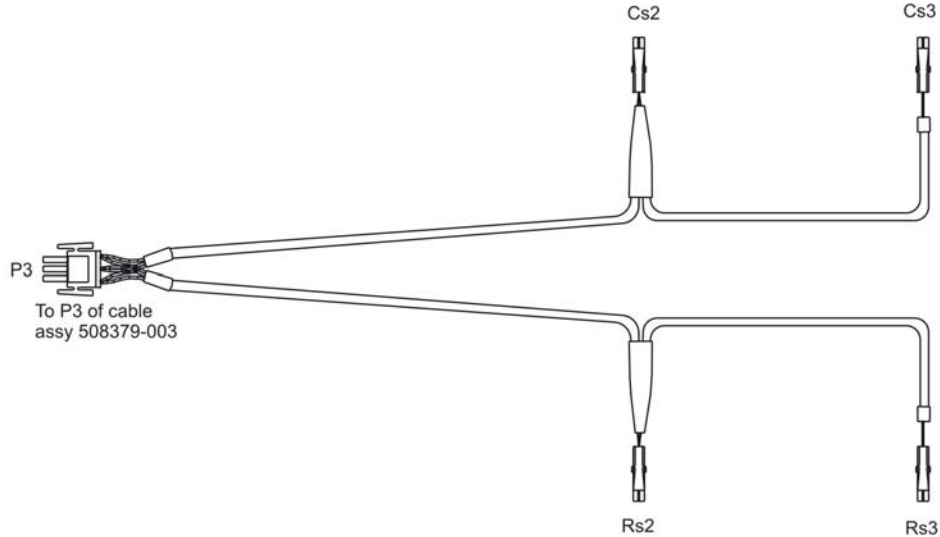
Figure 1-5. Quantum Dimming Control Cable Assembly (PN: 570008-xxx)

1.6 ODK4 Display & Keypad

The sign system is controlled through programmed instructions stored in ODK memory and through its liquid crystal display (LCD) touchscreen and keypad (see Fig. 1-10). Messages displayed on vehicle sign(s) can also be displayed on the ODK touchscreen.
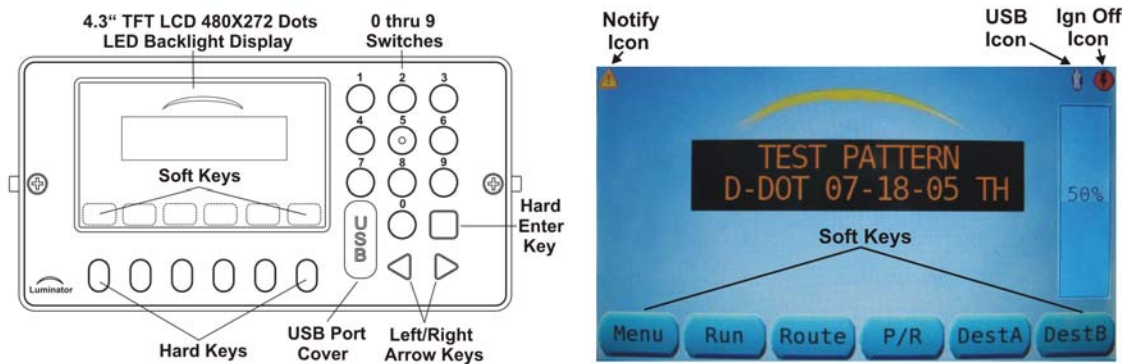
Figure 1-10. Operator's Display and Keyboard (ODK4)

Note: The touch sensitive soft keys labeled on the LCD touchscreen will vary per the current menu being displayed and are functionally identical to the blue hard keys located directly beneath them (and can be used interchangeably).

Explanation of Icons:

"Notify Icon" – System problem notification, (see Maintenance Section 6.4.4).

"USB Icon" – Flashdrive inserted, (see Maintenance Sections 6.5 and 6.6).

"Ign Off Icon" – Ignition off delay timer activated (indicating ODK is in timed shutdown).

SECTION 2
REMOVAL AND INSTALLATION

2.1 ODK4 Removal

1. Turn off power to the old ODK and sign system.

2. With a Phillips screwdriver, loosen two front bezel screws (one on each side of the ODK). As each screw turns, the threaded cam latch behind the panel will loosen and turn to allow removal.

3. When both screws are loosened, lift the ODK out of the panel and disconnect wiring at its rear. Be sure wires are retained and not free to fall out of reach behind the panel.

2.2 ODK4/Cable Installation – Vehicle Interface

The ODK4 comes complete and ready to use including a factory installed destination message listing per the relative agency.

WARNING

ENSURE ALL POWER IS OFF BEFORE CONNECTING ANY CABLES; DAMAGE TO EQUIPMENT MAY OCCUR

With power off, connect sign wiring to the ODK4.

1. Connect Power/Data Adaptor Cable (see Fig. 1-3):

   o Connect J1 connector to the ODK4 J1 (DB-9) connector

   o Connect P1 connector to existing front sign cable

   o Connect P2 connector to the existing dash sign cable (if equipped)

2. If equipped with a driver emergency/panic switch (or auxiliary equipment) connect Emergency/Auxiliary Input Adaptor Cable (see Fig. 1-4):

   o Connect P4 connector to the ODK4 J4 (DB-15) connector

   o Connect P1 connector to the emergency/panic switch cable provided by the OEM

   o Connect P2 connector to the auxiliary input cable provided by the OEM (if so equipped)

   o Connect P3 connector to P3 of cable 570008 going to the light fixtures

3. Put the ODK in position in the vehicle and secure by tightening the Phillips-head screw on each side of the ODK. As the screw turns, a cam latch swings out behind the vehicle panel to hold the ODK in position when the screw is tight.

4. The ODK4 is now ready for use. Refer to Section 3 for start-up and basic operation instructions.

2.3 ODK4/Cable Installation – Quantum D Direct Lighting

When using the Quantum Intelligent Lighting system, the following cables are also used;

Connect wiring to the direct lighting:

- o   Connect Quantum Dimming Control Cable P3 connector (see Fig. 1-5) to of Emergency/Auxiliary Input Adaptor Cable P3 connector (see Fig. 1-4)

- o   Connect the other Quantum Dimming Control Cable connectors (Cs2, Cs3, Rs2, Rs3) to the dimming control line (white wire) at each light fixture that will be dimmed

2.4 Load Software

If the ODK4 did not come pre-loaded with an agency's message listing or an agency wants to change a message listing, the message listing can be uploaded to the ODK via a standard USB 2.0 flashdrive.

Agencies can create their own message listing using Integrated Programming Software provided by Luminator or at the agencies request, Luminator will create and provide the message listing.

USB Stick Preparation

1. Insert your USB memory stick in you computer.

2. From Windows Explorer, click on the drive letter for your USB memory stick.

3. Using Windows Explorer, select File>New>Folder.

4. Rename this folder "odkMsgdb."

5. Copy your MTU file from your IPS folder, or email to the "odkMsgdb" folder on your USB Memory Stick.

6. Remove the USB Memory Stick from the computer.

To upload a message listing to the ODK4, remove the USB port cover and insert a standard USB 2.0 flashdrive containing the message listing (see Fig. 2-1).

Figure 2-1. Flashdrive Inserted in ODK4

Luminator Technology Group Co.

Once inserted, the ODK4 will automatically detect that the USB flashdrive has been inserted, locate the message listing, and upload the file.

If the drive contains more than one message listing (see Fig. 2-2), the operator will be prompted to select a file for upload.

   ✓ **Note:** If the Message Listing on the USB matches the file in ODK memory, the file will not automatically transfer (see Section 6.6.2 for the manual transfer process.)

Use the UP or DOWN key to select the desired program (see Fig. 2-2). After hi-lighting the desired program, press the OK key to start the message listing upload.
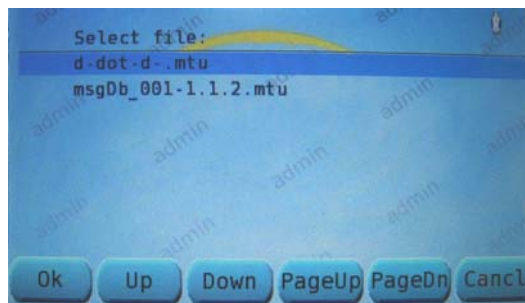
Figure 2-2. Multiple Message Listing Selection Screen

Upon completion of the message listing upload, the operator will be prompted to remove the USB flashdrive (see Fig. 2-3).
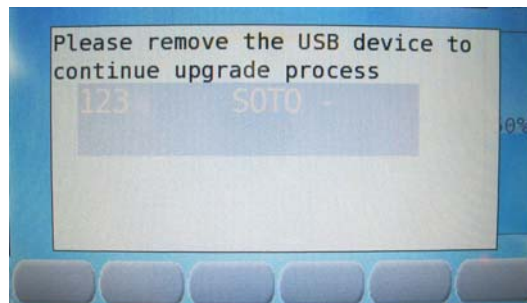
Figure 2-3. Remove USB Screen

Upon removing the USB, the operator will be given a message that the message listing database is being updated (see Fig. 2-4).

After a short period of time, the operator will be given a "Message Listing Successful" indicating the message listing database has been updated successfully.

The ODK4 will then automatically reboot (see Section 3.1) to complete the message listing upload process.
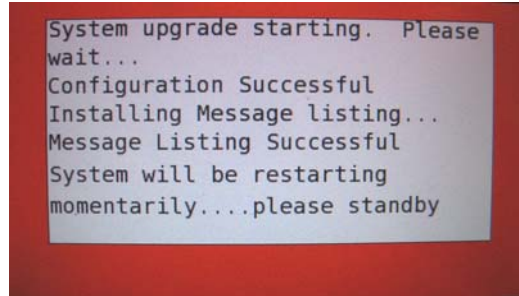
Figure 2-4. Message Database Update Status Screen

Upon completion of the reboot sequence, the sign system is ready to use the new message listing.
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SECTION 3
ODK4 STARTUP AND BASIC OPERATION

3.1   Initial Start-up

When the sign system is first powered on, after the initial greeting screen ("Welcome to Luminator ODK4 Booting, please wait…"), the ODK4 will display a configuration screen (see Fig 3-1). The configuration screen gives a full summary of overall configuration of the ODK4, including software version; hardware version; model number; and options currently enabled including auto-dim, touchscreen, communications protocols and alarm inputs.

Note: If difficulties are encountered with the system, the information contained on this screen will be necessary in order for a Luminator representative to offer assistance. This screen will normally be displayed for approximately 60 seconds as the ODK4 completes its boot-up sequence (press any key repeatedly to hold screen).

Figure 3-1. Boot-up Screen

After completion of boot-up, the default screen (see Fig. 3-2) will be displayed. This display will include touch-sensitive soft-keys for the basic operator functions (MENU; RUN; ROUTE; P/R; DESTA; DESTB). On start-up, the last message entered before power shutdown will be displayed on the ODK4.

Figure 3-2. Default Screen

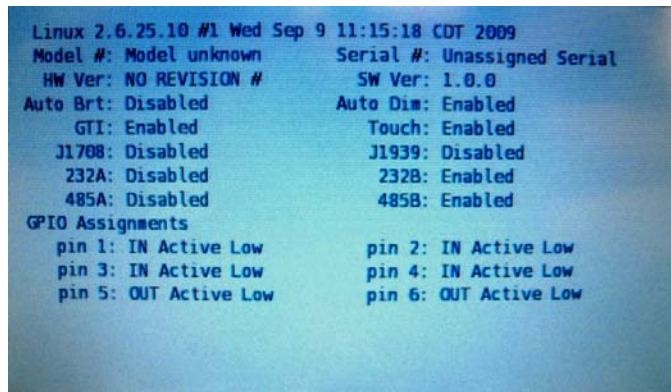**Function of the ODK4 soft keys on the default screen are as follows (see Steps 3-2 through 3-7 for basic operating instructions):**

MENU – Used to access advanced programming options (some require a password).

RUN – Used to enter run number. (This function is determined by transit authority programming.)

ROUTE – Used to enter route number. (This function is determined by transit authority programming.)

P/R – Used to enable public relations message code entry. (This switch may be disabled if public relation messages are not available.)

DESTA and **DESTB** – Used to enable respective destination message code entry for message display change. (These switches are permanently enabled.)

All destination and public relations (P/R) messages can be set and viewed from the ODK.

If enabled by transit authority programming, the emergency message is activated and displayed when the operator toggles or depresses the vehicle's emergency switch. (Based on the message listing configuration, the ODK may display a covert message or may continue to show the previously selected message.)

The sign system begins operation as soon as the vehicle is powered on. Examples of basic ODK operating procedures follow (see 3-2 through 3-7).

3.2   Set Run Number

The Run number function is enabled by the message listing. Run Number screens may be configured in the IPS software for Numeric entry, Hexadecimal entry, or Alphanumeric entry.

Note: Figures 3-3 and 3-7 are examples of Numerical code entry screens; Figure 3-5 is an Alphanumeric screen; and Figure 3-9 is a Hexadecimal entry screen (with A thru F keys located at the bottom of the screen). Screens are agency dependent.

To set a Run Number, press RUN Key on the default screen (see Fig.3-2). Enter the Run Number via the ODK number pad and then press ENTER (see Fig. 3-3).

Figure 3-3. Enter Run Number Screen.   Figure 3-4. Run Button Not Used Screen.

Note: To change a run number (or clear the message altogether) use the left/right arrow keys to hi-light a number and press CLEAR to erase it or press DEL to delete an individual character; then press ENTER.)

If manual entry of the RUN Number has been disabled (agency dependent) you will get the message "*RUN button not used"* (see Fig. 3-4).

3.3   Set Route Number

The Route number function is enabled by the message listing. Route Number screens may be configured in the IPS software for Numeric entry, Hexadecimal entry, or Alphanumeric entry.

To enter a Route Number, press the ROUTE Key on the default screen (see Fig. 3-2).

Figure 3-5. Route Number Screen   **Figure 3-6. Route Entered Screen**

Use the ODK keypad to enter a route number or left/right arrow keys to hi-light a letter then press SELCT to select it (see Fig. 3-5).

After entering the route number, press the hard ENTER Key. The route number just entered will be displayed on the ODK as well as on the route signs (see Fig. 3-6).

This route number will persist when you go from DestA to DestB without having to re-enter it.

Note: To change a Route Number, use the right arrow key to move the square cursor to the end of the string (see Fig. 3-5) and then use the left arrow key to move cursor back to the left to erase existing numbers.

If manual entry of the Route Number has been disabled (agency dependent) you will get the message "*ROUTE button not used"* (similar to Fig. 3-4).

3.4 Set Public Relations Message

The Public Relations (P/R) Message function is enabled by the message listing. P/R number screens may be configured in the IPS software for Decimal Numeric entry, or Hexadecimal entry.

To set the Public Relations Message press the P/R Key on the default screen (Fig. 3-2).
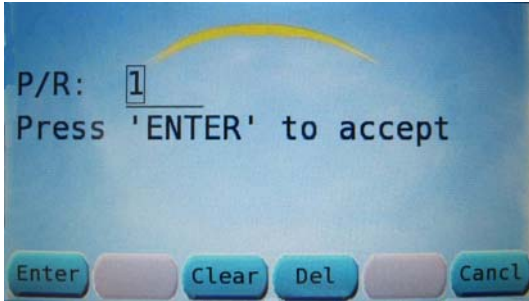
Figure 3-7. P/R Number Screen   **Figure 3-8. P/R Message Display**

Enter the P/R message code number via the ODK number pad and press ENTER (see Fig 3-7). Approximately 5 seconds after the P/R code number is entered it will display on the ODK display screen (see Fig. 3-8) and the route signs.

The P/R message will automatically alternate with the destination message until the P/R message is removed.

Note: To change a P/R code number (or clear the message altogether) use the left/right arrow keys to hi-light a number and press CLEAR to erase it or press DEL to delete an individual character; then press ENTER.)

3.5   Set Destination A or B Message

To set the Destination-A Message, press the DestA Key on the default screen (see Fig. 3-2).

Figure 3-9. Setting Dest A Window

Figure 3-10. New Dest A Set

Enter the destination code number via the ODK number pad and press the hard ENTER Key (see Fig. 3-9). In approximately 5 seconds after the destination code number is entered it will display on the ODK display screen (see Fig. 3-10) and the route signs.

Note: To change a destination code, type in the new number, or use the left and right arrow keys to move the square cursor to the number you wish to change, then enter the number or character.

Note: Setting Destination-B is performed in the same manner as setting Destination-A.

3.6   Set ODK Display Brightness Level

To set display brightness, first access the main menu screen by pressing MENU on the default screen (see Fig. 3-2).
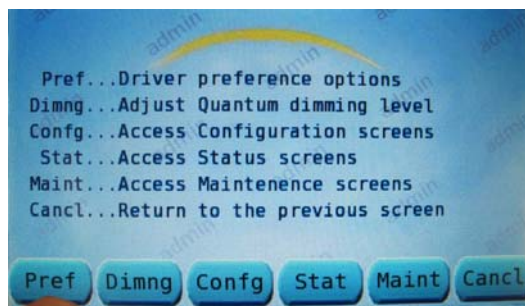

Figure 3-11. Main Menu Screen

From the Main Menu screen (see Fig. 3-11), press the PREF Key to access the Driver Preferences Options screen (see Fig. 3-12).
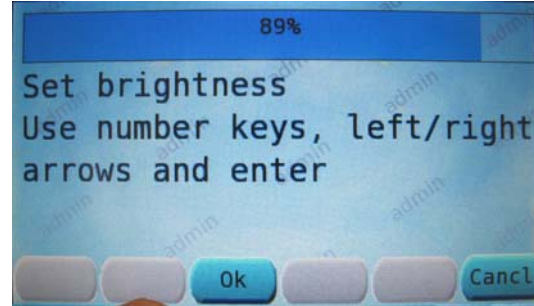
Figure 3-12. Driver Preference Options **Figure 3-13. Set Display Brightness**

From the Driver Preference Options screen (see Fig. 3-12), press the BRGHT Key

From the Set Display Brightness screen (see Fig. 3-13), touch the brightness level bar at the top of the screen (or use the keypad left/right arrow keys) to set the brightness level, then press OK.

   ✓ **Note***:* This screen adjusts the backlighting of the ODK DISPLAY ONLY; it does not adjust the brightness of the signs or individual lighting.

Note: To return the display to the original factory default brightness level, press the DFLTS Key from the Driver Preference Options screen (see Fig. 3-12); then press YES.

3.7   Set Quantum Lighting Dimming Level

This setting provides an adjustment range for the automatic lighting levels.1

Press MENU on the default screen (see Fig. 3-2) to access main menu screen (see Fig. 3-14).

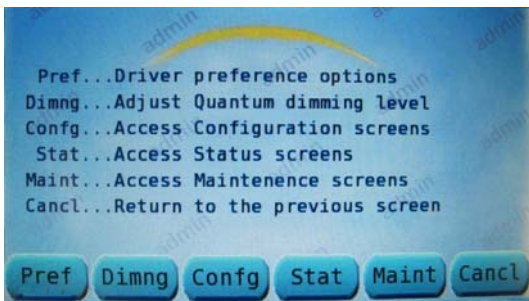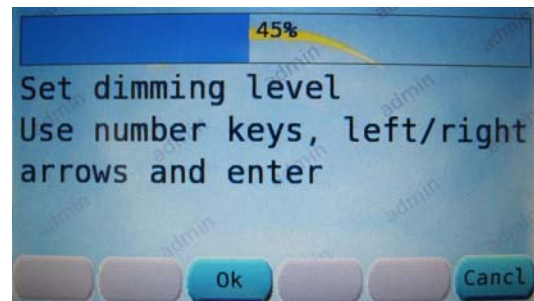**Figure 3-14. Main Menu Screen**   **Figure 3-15. Quantum Dimming Level**

From the Main Menu Screen (see Fig. 3-14), press the DIMNG Key.

From the Quantum Dimming Level screen (see Fig. 3-15) use the keypad left/right arrow to adjust the light level or press a number to set percentage of dimming. The lights will only adjust within the preset upper and lower limits. Press OK to save your choice.

SECTION 4
CONFIGURATION MENU SCREENS

4.1 Access Configuration Menu Screens

These screens are used to configure ODK operations and limits. Since these screens change the operation of the sign and lighting systems and are intended for use by trained personnel only, they are password protected.

Press MENU at the default screen (see Fig. 4-1) to access the Main Menu Screen (see Fig. 4-2).

Figure 4-1. Default Screen

Figure 4-2. Main Menu Screen
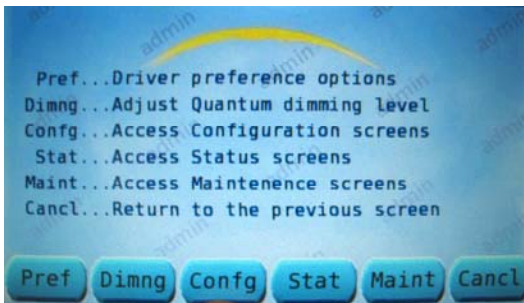

Figure 4-3. Access Configuration Screens

From the Main Menu Screen (see Fig. 4-2) press CONFG Key to open the Access Configuration Screens window – this will generate a request for a password.

From Access Configuration Screens (see Fig. 4-3) enter password, then press ENTER to access the Configuration Menu Screen (see Fig. 4-4).
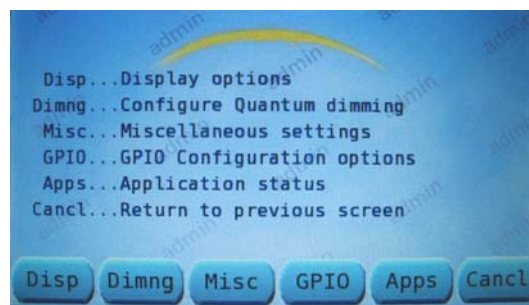

Figure 4-4. Configuration Menu Screen

4.2   Display Options

4.2.1 ODK4 Display -- Enable Touchscreen; Set Auto Adjust Brightness Mode; Set Min/Max/Default Values

Press DISP key on the Configuration Menu Screen (see Fig. 4-4) to access Display Options menu.

Figure 4-5. Display Options Menu   **Figure 4-6. Display Screen Settings**

From the Display Options menu (see Fig. 4-5), press the SCRN key to access Display Screen Settings menu.

From the Display Screen Settings menu (see Fig. 4-6), press PREV or NEXT buttons to move square cursor box over Touchscreen Enabled box (or Auto-Adjust Brightness box) and then use Left/Right arrow keys to check or un-check box (to enable/disable feature).

Use PREV/NEXT buttons to hi-light Maximum, Minimum, or Default boxes and then type a value in via the keypad (display brightness will change as value is entered). This range limits the operator accessible range referred to in Section 3.7, Figure 3-15.

The Default Brightness box sets the "DFLTS" key setting referred to in Section 3.6, Fig. 3-12.

Press SAVE to retain setting(s).

4.2.2 Access Displayed Sign Configuration Information

From the Configuration Menu (see Fig. 4-4), press DISP to access Display Options.

Figure 4-7. Display Options Menu   **Figure 4-8. Displayed Sign Selection**

From Display Options menu (see Fig. 4-7), press SIGN key to access Displayed Sign Selection screen.

The Displayed Sign Selection screen (see Fig. 4-8) details the designated address, style, size and data type for signs the ODK is expecting to find per the Message Listing.

To select a different sign to use as the Default Display, use the up/ down keys to select a particular sign and press OK (then repeatedly press Cancel to return to Default Screen).

Figures 4-9 and 4-10 below show examples of destination displays for different sign types.

Figure 4-9. Display for 8x96 Sign

Figure 4-10 Display for 16x160 Sign

4.2.3 Language Selection

To access the Configuration Menu see Figures 4-1 through 4-4.

From the Configuration Menu (see Fig. 4-4), press DISP key to access Display Options.

Figure 4-11. Display Options Menu
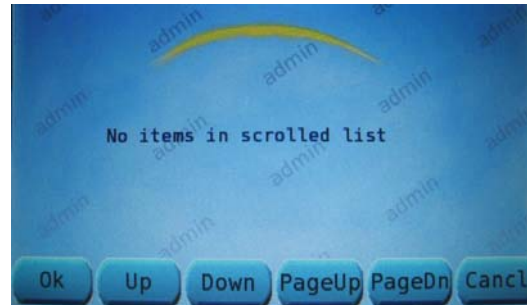
Figure 4-12. Language Selection List

From Display Options (see Fig. 4-11), press LANG Key to access Language Selection list.

The Language Selection list (see Fig. 4-12) shows possible Languages (other than the default of English) which are available in ODK memory.

To change to a different Language (if available) use the up/down keys to highlight an alternate choice and press OK.
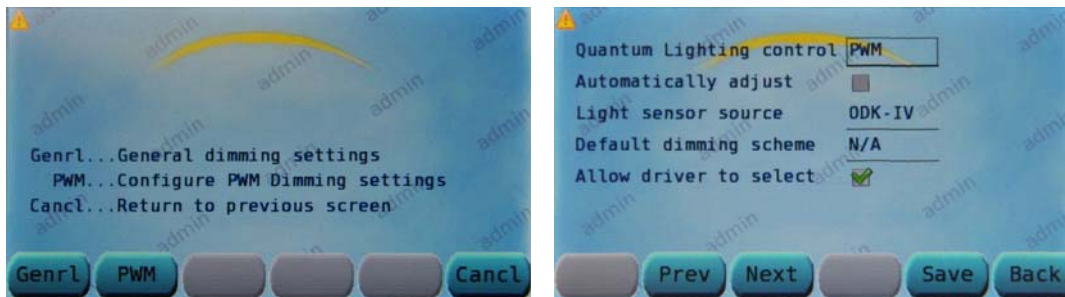
4.3   Configure Quantum Dimming

4.3.1 General Dimming Settings – (Quantum Lighting Control; Auto-Adjust Enable; Sensor Source; Default Dimming Scheme; Allow Driver to Select)

Configuration of the Quantum Interior Lighting System is done using these menus.

To access the Configuration Menu see Figures 4-1 through 4-4.

From the Configuration Menu (see Fig. 4-4), press DIMNG Key to access the Configure Quantum Dimming menu (see Fig. 4-13).

Figure 4-13. Configure Quan. Dimming Figure 4-14. General Dimming Settings

From Configure Quantum Dimming (see Fig. 4-13) press the GENRL Key to access General Dimming Settings (see Figure 4-14).

From General Dimming Settings (see Fig. 4-14) use PREV/NEXT to move cursor box over an item;

Use Left/Right arrow keys to check/un-check a box (to enable/disable respectively);

Use Left/Right arrow keys to cycle other selections:

 -- e.g. cycle "Quantum Lighting Control" to QuantumD, PWM or Disabled.

 -- e.g. cycle "Light Sensor Source" to ODK4 or GPIO.

The functions for each of the screen selections are as follows:

1. Quantum Lighting Control:

- Quantum D – an intelligent dimming system that allows each panel to be configured for specific dimming levels based on inputs from the vehicle

- PWM – a variable dimming system that allows the driver to adjust the light level of any fixtures connected to the ODK4 PWM output

- Disabled – disables support for Quantum Lighting

2. Automatically Adjust:

- Selecting this feature allows the ODK to automatically adjust the Quantum light levels based on ambient light

3. Light Source Sensor:

- ODK-IV – uses the photocell on the face of the ODK4

- GPIO-MUX – uses an optional auxiliary light-sensor connected to the GPIO-Mux Box (Quantum D Intelligent only)

4. Default Dimming Scheme:

- This feature is disabled on the standard Quantum D direct lighting scheme

5. Allow Driver To Select:

- Enables the driver selection for variable dimming on the main screen, (not used on Quantum D Intelligent systems)
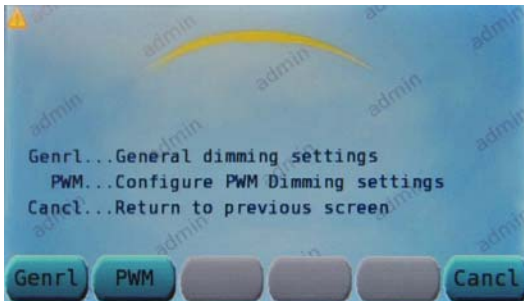
Press SAVE to retain any changes.

4.3.2 Configure PWM Dimming Settings – (Max/Min/Default Values)

This screen is used for the variable dimming Quantum system, not the Quantum D Intelligent system.

To access the Configuration Menu see Figures 4-1 through 4-4.

From the Configuration Menu (see Fig. 4-4) press DIMNG to access Configure Quantum Dimming menu (see Fig. 4-15).

Figure 4-15. Config. Quant. Dimming   Figure 4-16. Config. PWM Dimming

From the Configure Quantum Dimming menu (see Fig. 4-15), press the PWM Key to access the Configure PWM Dimming Settings menu (see Fig.4-16).

Use PREV/NEXT buttons to hi-light Maximum, Minimum, or Default boxes, and then type in a value via the numeric keypad (or use left/right arrows).

The light level will adjust as the value is entered.

Press SAVE to retain any changes.

4.4 Miscellaneous Settings

4.4.1 Enter Vehicle ID

To access the Configuration Menu see Figures 4-1 through 4-4.

From the Configuration Menu (see Fig. 4-4) press MISC to access the Miscellaneous Settings Menu.

Figure 4-17. Miscellaneous Settings   **Figure 4-18. Enter the Vehicle ID Screen**

From the Miscellaneous Settings Menu (see Fig. 4-17) press the VEHID Key to access Enter The Vehicle ID screen (see Fig. 4-18).

From the Enter The Vehicle ID screen (see Fig. 4-18) use the numeric keypad to enter numbers; use the left/right soft keys to enter a letter and then press the Select Key to verify each alpha-character entry.

Use the ODK left/right arrow keys to backspace over an entry to erase it. Press ENTER when finished.

4.4.2 Set Button Pressed Sound Mode

To access the Configuration Menu see Figures 4-1 through 4-4.

From the Configuration Menu (see Fig. 4-4) press MISC to access the Miscellaneous Settings Menu.

Figure 4-19. Miscellaneous Settings Mode   **Figure 4-20. Button Pressed Sound**

From Miscellaneous Settings (see Fig. 4-19) press the BZZR Key to access the Button Pressed Sound Mode screen (see Fig. 4-20).

Press ENBL or DSABL (see Fig. 4-20) to enable/disable (respectively) a tone being sounded each time a key is depressed; press ENTER to save choice.

4.4.3 Configure Emergency Message Options (Auto-Off/Enable-Input)

Emergency Mode – Configures the method for cancelling the Emergency Mode.

To access the Configuration Menu see Figures 4-1 through 4-4.

From the Configuration Menu (see Fig. 4-4) press MISC to access the Miscellaneous Settings Menu.
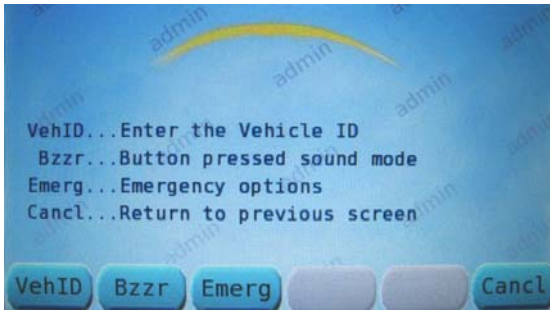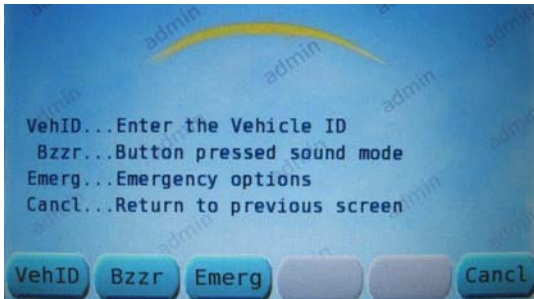

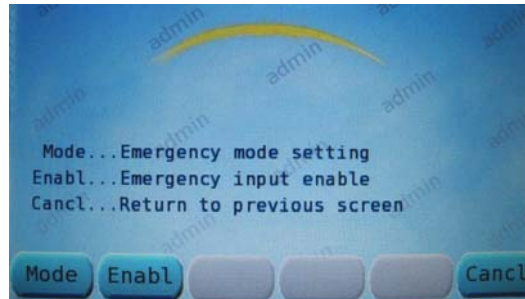**Figure 4-21. Miscellaneous Settings**   **Figure 4-22. Emergency Options Menu**

From the Miscellaneous Settings Menu (see Fig. 4-21) press EMERG Key to access the Emergency Options Menu (see Fig. 4-22).

4.4.3.1 Configure Emergency Message Options - Auto-Off

From the Emergency Options Menu (see Fig. 4-22) press the MODE Key to access the Emergency Mode Setting screen (see Fig. 4-23).

Figure 4-23. Emerg. Mode Setting

From the Emergency Mode Setting screen (see Fig. 4-23) press ENBL or DSABL to enable/disable (respectively) the emergency message Auto-Off Mode.

The functions are as follows:

1. Auto-Off Enabled:

- The emergency mode will cancel and return to the previous destination display when the emergency input signal is removed. Auto-off enabled should only be used when the emergency input signal is maintained for the duration of the event

2. Auto-Off Disabled:

- The emergency mode will not cancel until the emergency input signal is removed and a destination code is entered from the main default screen. Auto-off disabled may be used with either 'maintained' or 'momentary' type inputs

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4.4.3.2 Configure Emergency Message Options - Enable-Input

From the Emergency Options Menu (see Fig. 4-22) press the ENABL Key to access the Emergency Input Enable screen (see Fig. 4-24).
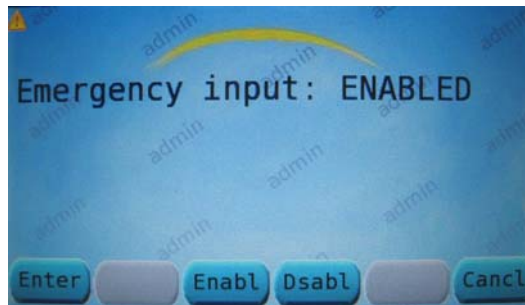

Figure 4-24. Emergency Input Enable

From the Emergency Input Enable screen (see Fig. 4-24) pressing the ENBL Key enables the entire emergency function with a single key press (or DSABL to disable the entire function).

Press ENTER to execute choice.

4.5 GPIO Configuration Options (Enable/Disable Inputs/Outputs)

General Purpose Input Output (GPIO) pins allow the ODK to interface with discrete inputs (switches, signals) from the vehicle and also allows for discrete outputs to the vehicle.

To access the Configuration Menu see Figures 4-1 through 4-4.

From the Configuration Menu Screen (see Fig. 4-4) press GPIO to access the GPIO Configuration Options screen (see Fig. 4-25).

Figure 4-25. GPIO Configuration Options

Note: GPIO pin function and assignments are only configurable by Luminator trained personnel. Screen references are defined as follows:

- Pin – Describes the type of Pin

    o NATV (Native) pins are physically located on the ODK4

    o MUX pins are physically located on the MUX Controller

- o   VIRT (Virtual) pins are defined in the configuration file, and may be defined by other pins. For instance, If the lighting control ON and NORMAL pins are not active, then the OFF pin is logically active

- Meaning – describes the assigned functionality of the pin

- Ena (Enabled) – Indicates if the pin is enabled or disabled. Use the Up/Down (or PageUp/PageDn) Keys (see Fig. 4-25) to move the highlight bar up or down. To enable/disable a pin input (or output) you've highlighted, use Left/Right Arrow Keys to change the state (under the screen header "Ena") to a "Y" (enable) or to an "N" (disable); then press ENTER to accept the change (or cancel to exit without saving any changes)

- Dir (Direction) – Indicates if the pin is used as an Input (I) or Output (O)

- Pri (Priority) – Indicates the priority of signals or groups of signals. This setting defines which pins have higher priority over other signals

- Grp (Group) – Allows pins to be grouped together for logical use (used with Virtual Pins)

- Sense – Indicates if the pin is active High or active Low

4.6 Application Status

To access the Configuration Menu see Figures 4-1 through 4-4.

From the Configuration Menu Screen (see Fig. 4-4) press APPS Key to access the Application Status screen (see Fig. 4-26).

Figure 4-26. Application Status Screen

The Application Status screen (see Fig. 4-26) contains all information regarding currently installed applications - i.e. filename, the type of interface and any pertinent details.

SECTION 5
STATUS MENU SCREENS

5.1 Access Status Menu Screens

These screens are used to monitor ODK configurations and operations.

Press MENU at the default screen (see Fig. 5-1) to access the Main Menu Screen (see Fig. 5-2).

Figure 5-1. Default Screen

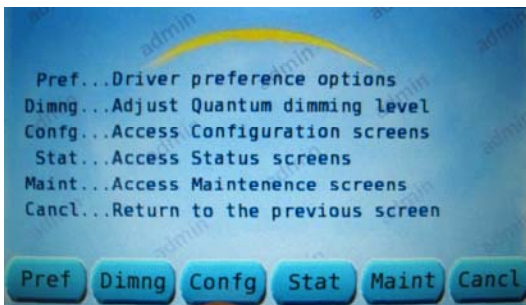
Figure 5-2. Main Menu

Figure 5-3. Access Status Screens

From the Main Menu Screen (see Fig. 5-2) press STAT Key to open the Access Status Screens window – this will generate a request for a password.

From the Access Status Screens window (see Fig. 5-3) enter password via keypad; then press ENTER to access the Status Menu Screen (see Fig. 5-4).
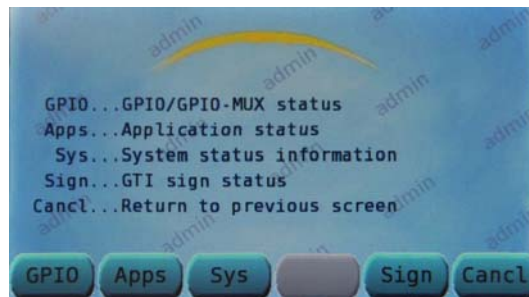

Figure 5-4. Status Menu Screen

5.2 GPIO-Pin Status

To access the Status Menu see Figures 5-1 through 5-4.

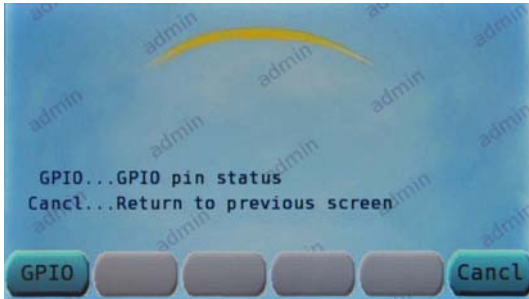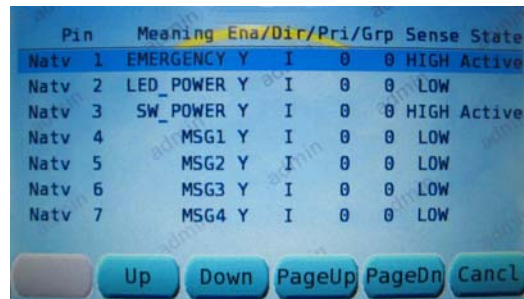From the Status Menu (see Fig. 5-4) press GPIO Key to access the GPIO Pin Status screen.

Figure 5-5. GPIO Pin Status Menu

Figure 5-6. GPIO Pin Status Screen

From the GPIO Pin Status screen (see Fig. 5-5) press GPIO Key to access the GPIO Pin Status screen.

Note: Unlike the Configuration Menu GPIO Screen see (see Fig. 4-25), you cannot change (enable/disable) the state of an input (or output) from this screen.

- ✓ **Note:** If a particular function is not working or not responding, this screen can be used to determine if the ODK is recognizing the input for that function.

The GPIO Pin Status screen (see Fig.5-6) contains the current status of all assigned inputs/outputs. Screen references are defined as follows:
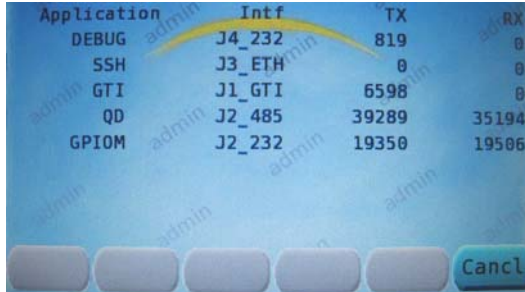
- Pin – Describes the type of Pin:

    o NATV (Native) pins are physically located on the ODK4

- Meaning – describes the assigned functionality of the pin

- Ena (Enabled) – Indicates if the pin is enabled or disabled

- Dir (Direction) – Indicates if the pin is used as an Input or Output

- Pri (Priority) – Indicates the priority of signals or groups of signals. This setting defines which pins have higher priority over other signals

- Grp (Group) – Allows pins to be grouped together for logical use (used with Virtual Pins)

- Sense – Indicates if the pin is active High or active Low

- State – Indicates when the pin is Active

5.3 Application Status

To access the Status Menu see Figures 5-1 through 5-4.

From the Status Menu (see Fig. 5-4) press the APPS Key to access the Application Status screen.

Figure 5-7. Application Status Screen

The Applications Status screen (see Fig. 5-7) contains the application name, communication interface type, and operational status of the signs in the system.

The specific applications enabled for a particular customer may vary.

✓ **Note:** This screen can be used to assist in troubleshooting communication difficulties. For GTI (Sign communication), QD (Quantum Direct communication to slave controllers) and GPIOM (GPIO Mux box communications), a lack of TX (transmit) and RX (receive) values may indicate communication failures with that particular device.

5.4 System Status Information

System Status is for informational purposes only and may be used by Luminator Engineering for troubleshooting or evaluation purposes.

5.4.1 Microprocessor Loading

To access the Status Menu see Figures 5-1 through 5-4.

From the Status Menu (see Fig. 5-4) press SYS Key to access the System Status Information menu.

Figure 5-8. System Status Info. Menu Figure 5-9. Microprocessor Loading

From the System Status Information menu (see Fig. 5-8) press the uP Key to access the Microprocessor Loading screen (see Fig. 5-9) which displays all activity/loading of the microprocessor.

5.4.2 View Memory Information

To access the Status Menu see Figures 5-1 through 5-4.

From the Status Menu (see Fig. 5-4) press SYS Key to access the System Status Information menu.

Figure 5-10. System Status Info. Menu **Figure 5-11. View Memory Information**

From the System Status Information menu (see Fig. 5-10) press the MEMRY Key to access the View Memory Information screen.

The View Memory Information screen (see Fig. 5-11) contains all information regarding used/available memory; number of buffers and amount of cached information.

5.4.3 Process Information

To access the Status Menu see Figures 5-1 through 5-4.

From the Status Menu (see Fig. 5-4) press SYS Key to access the System Status Information menu.
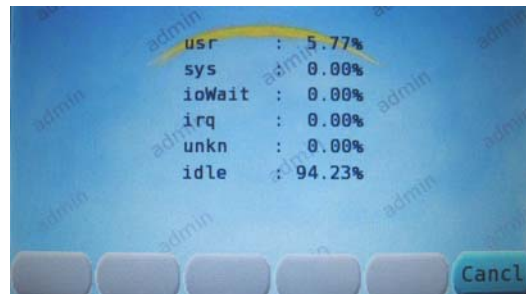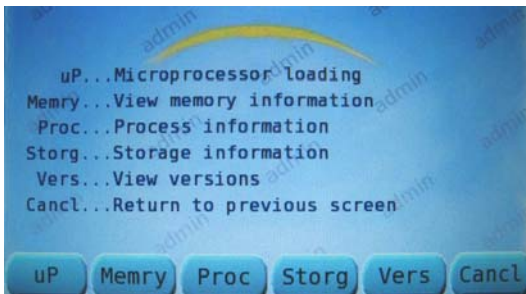

Figure 5-12. System Status Info. Menu **Figure 5-13. Process Information Screen**

From the System Status Information menu (see Fig. 5-12) press the PROC Key to access the Process Information screen.

The Process Information screen (see Fig. 5-13) contains information regarding all software processes currently running (or not), but does not indicate the function or system is operating, only that it is loaded in ODK4 memory and available.

See Section 5.3, Figure 5-7 for communication status with various devices.

5.4.4 Storage Information

To access the Status Menu see Figures 5-1 through 5-4.

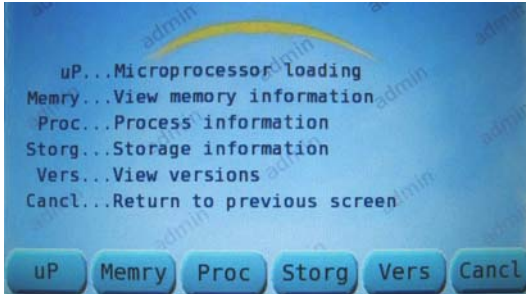From the Status Menu (see Fig. 5-4) press SYS Key to access the System Status Information menu.

Figure 5-14. System Status Info. Menu   Figure 5-15. Storage Information Screen

From the System Status Information Menu (see Fig. 5-14) press the STORG Key to access the Storage Information screen.

The Storage Information screen (see Fig. 5-15) contains information regarding the title and size of all files currently in storage.

5.4.5 View Versions

To access the Status Menu see Figures 5-1 through 5-4.

From the Status Menu (see Fig. 5-4) press SYS Key to access the System Status Information menu.

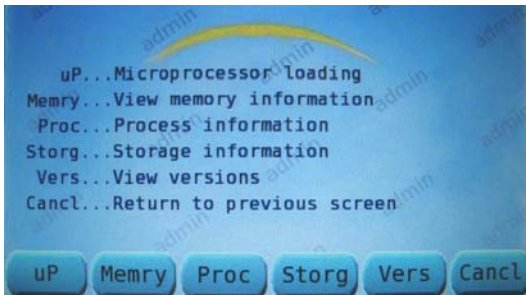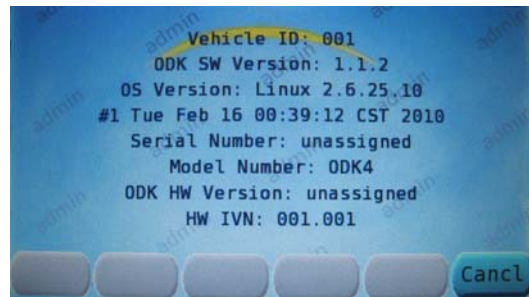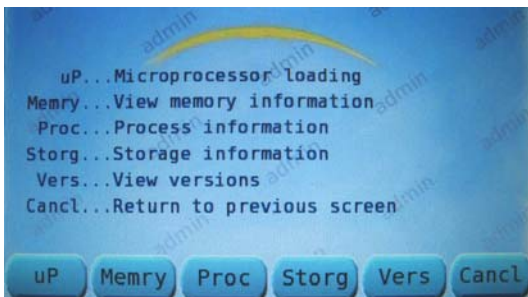**Figure 5-16. System Status Info. Menu   Figure 5-17. View Versions Screen**

From the System Status Information menu (see Fig. 5-16) press the VERS Key to access the View Versions screen.

The View Versions screen (see Fig. 5-17) contains Vehicle ID, ODK Operating Software Version; Date; Serial Number; Model Number; and ODK Hardware Version.

✓ **Note:** These values may be requested by Luminator personnel to assist in troubleshooting.

5.5 GTI Sign Status

To access the Status Menu see Figures 5-1 through 5-4.

From the Status Menu (see Fig. 5-4) press the SIGN Key to access the View Sign Status screen.

Figure 5-18. View Sign Status Screen

The View Sign Status screen (see Fig. 5-18) displays the address as well as the number of received messages; transmitted messages; and logs the number of failed transmissions.

The Sign Status screen can be used as an aid in troubleshooting the sign system:

- The address of a sign and the number of transmit (TX) and receive (RX) messages indicates communication between the ODK and a particular sign in the system.

- TX messages without RX messages can indicate communication problems at a sign.

- Reception failures by a sign are uncommon, but could indicate noisy or damaged communication wires, or other problems with the communication circuitry on either the ODK or the individual sign.

- Sign address 127 is the MTU port. The ODK will transmit polls to check for an MTU being connected for message listing transfer.

- Note: certain versions of ODK4 software do not include the heartbeat communication polling as seen in previous generations of GTI signs.

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SECTION 6
MAINTENANCE MENU SCREENS

6.1 Access Maintenance Screens

These screens are used to verify/calibrate/upgrade ODK functions and operations.

Press MENU at the default screen (see Fig. 6-1) to go to the Main Menu Screen.

Figure 6-1. Default Screen
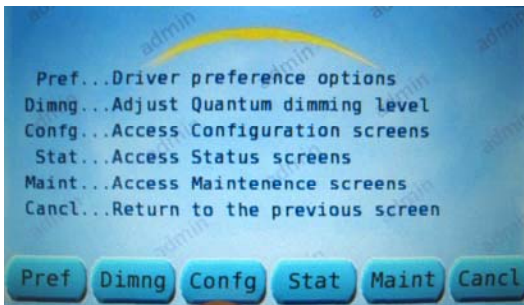
Figure 6-2. Main Menu

Figure 6-3. Access Maintenance. Screen

From the Main Menu Screen (see Fig. 6-2) press the MAINT Key to open the Access Maintenance Screens window – this will generate a request for a password.

From the Access Status Screens window (see Fig. 6-3) enter password via keypad; then press ENTER to access the Maintenance Menu Screen (see Fig. 6-4).

Figure 6-4. Maintenance Menu Screen

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6.2 Perform Hardware Test Tests

6.2.1 Pushbutton Tests

To access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the TESTS Key to access the Perform Hardware Tests menu.

Figure 6-5. Perform Hardware Tests

Figure 6-6. Pushbutton Tests Screen

From the Perform Hardware Tests menu (see Fig. 6-5) press the BTNS key to access the Pushbutton Tests screen.

From the Pushbutton Tests screen (see Fig. 6-6) press TYPE to open the Perform Free-Form Button Test window.
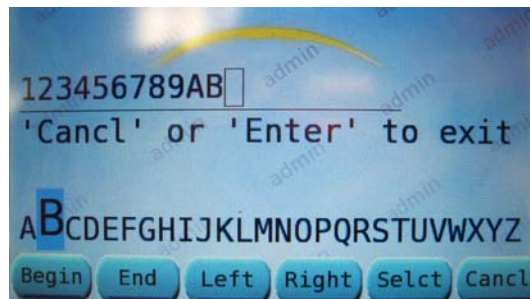
Figure 6-7. Free-Form Button Test Window

At the Free-Form Button Test window (see Fig. 6-7) use the ODK numeric keypad to enter numbers.

Use the left/right soft keys to hi-light a letter on the screen, then press SELCT to add that letter to the line on the screen. Use the ODK left/right arrow keys to backspace over an entry to erase it. Press ENTER when finished.

After keypad function is tested, press the hard ENTER Key, this will take you back to the Pushbutton Tests screen (Fig. 6-6).

If all the key strokes both functioned and registered correctly, press PASS (Fig. 6-6) to log successful test results; press FAIL if there was a problem/malfunction.

6.2.2 Light Sensor Tests

To access the Maintenance Menu see Figures 6-1 through 6-4.

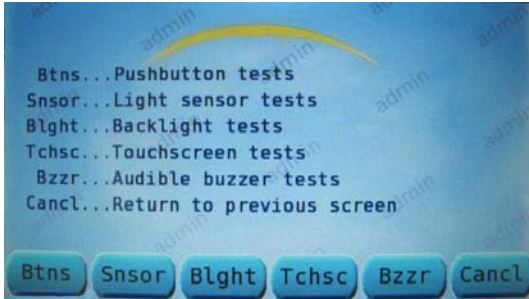From the Maintenance Menu (see Fig. 6-4) press the TESTS Key to access the Perform Hardware Tests menu.

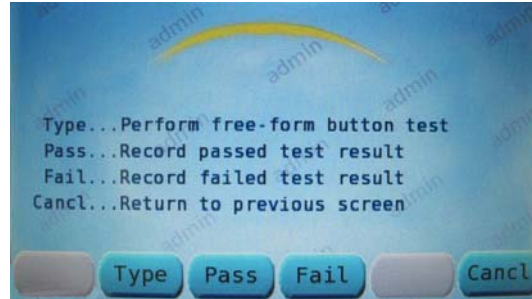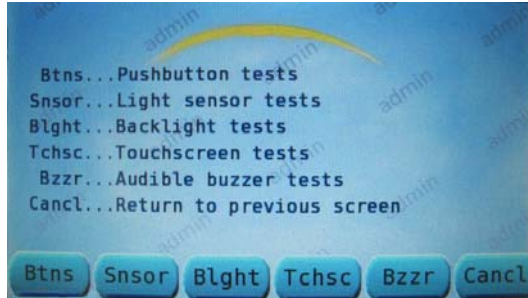**Figure 6-8. Perform Hardware Tests**

From the Perform Hardware Tests menu (see Fig. 6-8) press the SNSOR Key to access the Light Sensor Test screen.

Figure 6-9. Light Sensor Test Screen   **Figure 6-10. Light Sensor Location**

Once in the Light Sensor Test screen (Fig. 6-9), cover the light sensor on the front of the ODK (see Fig. 6-10) to test it for proper function.

Figure 6-11. Light Sensor Test Results

With the light sensor covered, the message on the test screen should change from "Please cover the photo sensor" to "Sensor functional." Press PASS to log proper operation (or FAIL if it stated "Sensor non-functional").

6.2.3 Backlight Tests

To access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the TESTS Key to access the Perform Hardware Tests menu.

Figure 6-12. Perform Hardware Tests   **Figure 6-13. Backlight Tests Screen**

From the Perform Hardware Tests menu (see Fig. 6-12) press the BLGHT Key to access the Backlight Tests screen.

Immediately after pressing the BLGHT Key (if Auto-brightness is enabled) the Backlight Test screen (see Fig. 6-13) should cycle through 9 levels of brightness and continue to cycle until you press PASS (or FAIL if it doesn't cycle) to log the results.
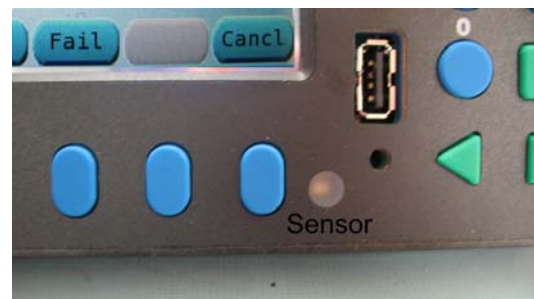
6.2.4 Touchscreen Tests

To access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the TESTS Key to access the Perform Hardware Tests menu.

Figure 6-14. Perform Hardware Tests   **Figure 6-15. Touchscreen Test Screen**

From the Perform Hardware Tests menu (see Fig. 6-14) press the TCHSC Key to access the Touchscreen Tests screen.

The Touchscreen Tests screen (see Fig. 6-15) will display a cross-hair in the upper left corner of the screen (see circle). Touching the cross-hair will make it disappear and then reappear on the top right; then to the bottom right, bottom left, and lastly the center (with each successive touch). Touching the center cross-hair changes the screen to, "All touch points touched." Press PASS if it cycles correctly (or FAIL if it doesn't) to log the results. Note: This screen only tests touchscreen function, it does not calibrate it.

6.2.5 Audible Buzzer Tests

To access the Maintenance Menu see Figures 6-1 through 6-4.

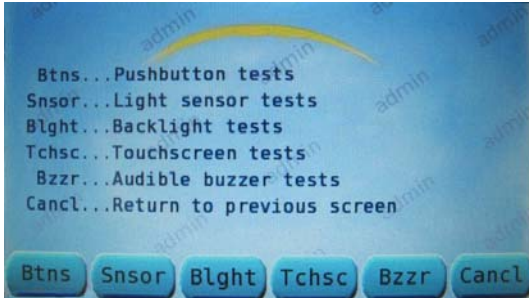From the Maintenance Menu (see Fig. 6-4) press the TESTS Key to access the Perform Hardware Tests menu.
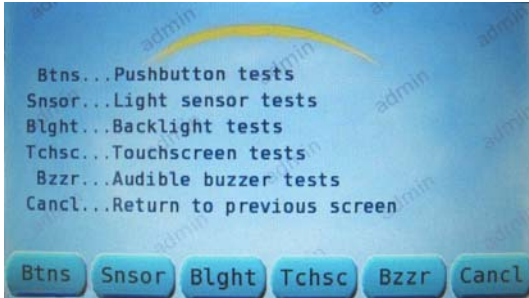
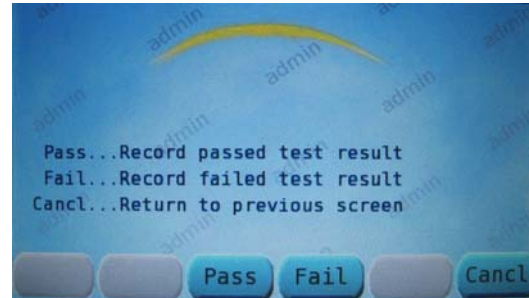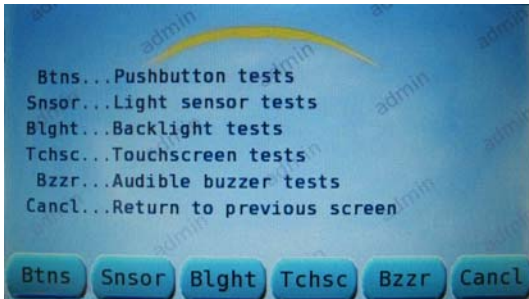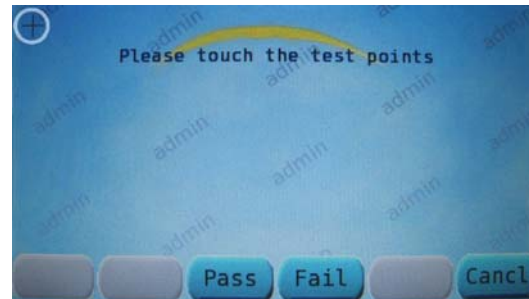**Figure 6-16. Perform Hardware Tests**   **Figure 6-17. Audible Buzzer Tests Screen**
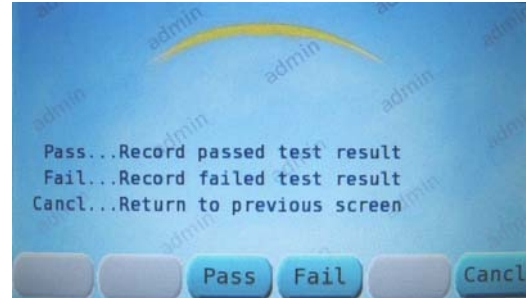
From the Perform Hardware Tests menu (see Fig. 6-16) press the BZZR Key to access the Audible Buzzer Tests screen.

The Audible Buzzer Tests screen (see Fig. 6-17) will display and immediately begin to cycle through a series of approximately 22 levels of tones.

Press PASS if it cycles correctly (or FAIL if it doesn't cycle) to log the results.

6.3 Soft Reset the ODK

To access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the RESET Key to access the Soft Reset The ODK screen.
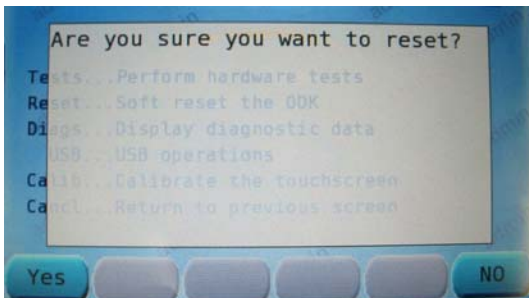
Figure 6-18. Soft Reset The ODK   **Figure 6-19. System Restart Screen**

From the Soft Reset The ODK screen (see Fig. 6-18) press the YES key to initiate reset of the ODK.

The ODK will acknowledge restart (see Fig. 6-19) and will go through the normal boot-up sequence and be ready for full operation upon completion.

6.4 Display Diagnostic Data

6.4.1 Quantum D Diagnostics

To access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the DIAGS Key to access the Display Diagnostic Data menu (see Fig. 6-20).

Figure 6-20. Display Diagnostic Data

Figure 6-21. Quan. D Diagnostic screen

From the Display Diagnostic Data menu (see Fig. 6-20) press the QntmD Key to access the Quantum D Diagnostic screen (see Fig.6-21).

Note: This feature is only used with Quantum Intelligent systems; as a result the screen should state, "No items in scrolled list," (see Fig. 6-21).

6.4.2 View ODK Diagnostic Counts

To access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the DIAGS Key to access the Display Diagnostic Data menu (see Fig. 6-20).
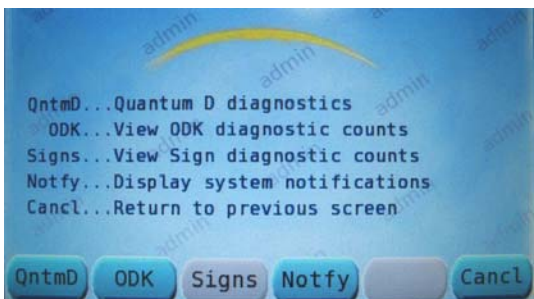
Figure 6-22. Display Diagnostic Data
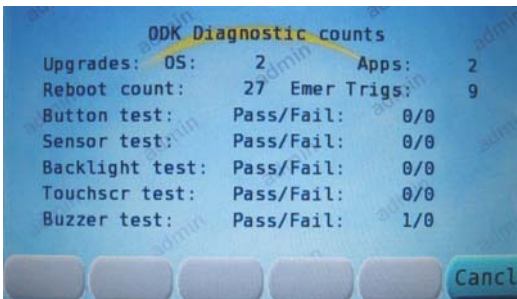
Figure 6-23. View ODK Diagnostic Counts

From the Display Diagnostic Data menu (see Fig. 6-22) press the ODK Key to access the View ODK Diagnostic Counts screen (see Fig.6-23).

This screen is a history of results from regularly schedule maintenance tests.

6.4.3 View Signs Diagnostic Information

Note: As of the writing of this manual, "Signs - View Sign Diagnostic Counts" is not yet functional (ergo the key is grayed out).

6.4.4 Display System Notifications

To access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the DIAGS Key to access the Display Diagnostic Data menu (see Fig. 6-22).
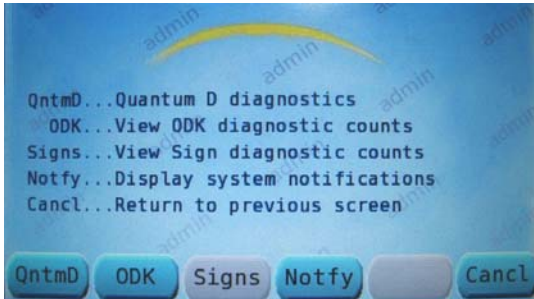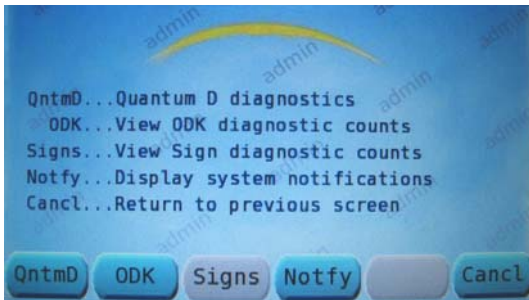

Figure 6-24. Display Diagnostic Data

Figure 6-25. Display Sys. Notifications (No system faults)

From the Display Diagnostic Data menu (see Fig. 6-22) press the NOTIFY Key to access the Display System Notifications screen (see Fig. 6-23).

The normal Display System Notifications screen for a system with no faults should state, "No items in scrolled list," (see Fig. 6-25).
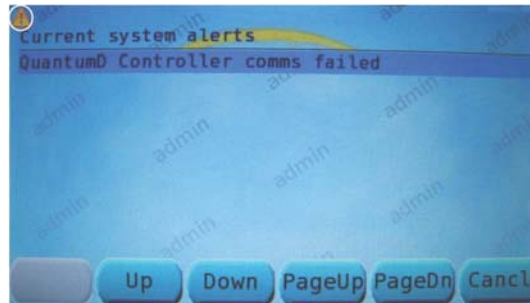
Figure 6-26. Display Sys. Notifications (Quantum D Communications Failed)

The "**!**" symbol in a yellow triangle in the upper left corner (see circle, Fig. 6-26) of the ODK4 display screen advises the driver or mechanic that there is a notification alert waiting (this will appear on all screens including the default screen).

See Table 6-1 for a list of possible ODK4 fault/failure notifications.

Table 6-1. ODK4 Notifications

"GTI Sign communications failed"
"QuantumD Controller fault detected"
"QuantumD Controller comms failed"
"GTI device open failed"
"J1708 device open failed"
"Generic Interface device open failed"
"ODK Light sensor device open failed"
"ODK Backlight device open failed"
"ODK Buzzer device open failed"
"ODK PWM device open failed"

✓ **Note:** As an aid to the mechanic, Notifications can assist in isolating problems that happened during the daily operation of the vehicle that were not observed by the mechanic.

- The notification screens are password protected to avoid inadvertently clearing a notification.

  o Notifications remain on the ODK4 screen until they are read.

  o When reading a notification, the "**!**" symbol will clear from the ODK4 display.

    ✓ **Note:** If the "**!**" symbol comes back after reading the notification, then the problem still exists in the system.

6.5 USB Operations (Save to Device)

6.5.1 Save Syslog to Device

The system log is only used by Luminator Engineering for troubleshooting and debugging purposes. To access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the USB Key to access the USB Operations menu. Remove USB port cover and insert flashdrive into USB Port (note the USB [inserted] Icon circled in the upper right corner).

Figure 6-27. USB Operations Menu

From the USB Operations menu (see Fig. 6-27) press the SAVE Key to access the Save to Device menu (see Fig. 6-28).

Figure 6-28. Save to Device Menu

From the Save to Device menu (see Fig. 6-28) press the LOG Key to initiate the Save Syslog to Device command (see Fig. 6-29).
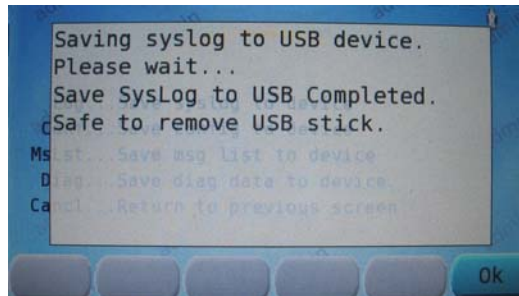
Figure 6-29. Save Syslog Message

Immediately after pressing the LOG Key the ODK will begin saving the System Log to the flashdrive. After 60 seconds the System Log will be saved and the ODK will indicate it is now safe to remove the flashdrive (see Fig. 6-29).

6.5.2 Save Configuration to Device

The configuration file can be saved from the ODK to the USB device to allow copying to other ODK4 units. To access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the USB Key to access the USB Operations menu. Remove USB port cover and insert flashdrive into USB Port.

Figure 6-30. USB Operations Menu

From the USB Operations menu (see Fig. 6-30) press the SAVE Key to access the Save to Device menu (see Fig. 6-31).

Figure 6-31. Save to Device Menu

From the Save to Device menu (see Fig. 6-31) press the CONF Key to initiate the Save Configuration to Device command (see Fig. 6-32).
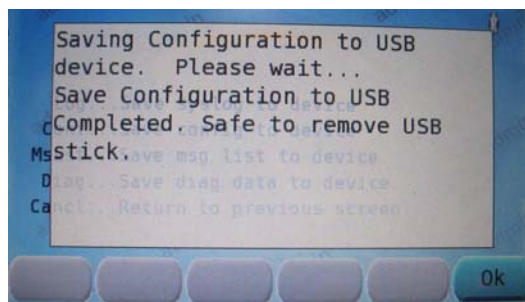
Figure 6-32. Save Config. Complete

Immediately after pressing the CONF Key the ODK will begin saving the System Configuration to the flashdrive. After 60 seconds the System Configuration will be saved and the ODK will indicate it is now safe to remove flashdrive (see Fig. 6-32).

6.5.3 Save Message Listing to Device

The message listing file can be saved from the ODK to the USB device to allow copying to other ODK4 units. To access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the USB Key to access the USB Operations menu. Remove USB port cover and insert flashdrive into USB Port.


Figure 6-33. USB Operations Menu

From the USB Operations menu (see Fig. 6-33) press the SAVE Key to access the Save to Device menu (see Fig. 6-34).

Figure 6-34. Save to Device Menu

From the Save to Device menu (see Fig. 6-34) press the MSLST Key to initiate the Save Message List to Device command (see Fig. 6-35).
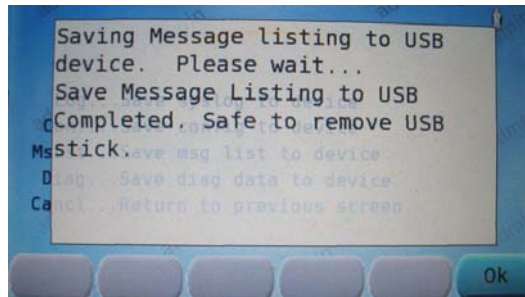
Figure 6-35. Save Message Listing Complete

Immediately after pressing the MSLST Key the ODK will begin saving the Message Listing to the flashdrive. After 60 seconds the Message Listing will be saved and the ODK will indicate it is now safe to remove flashdrive (see Fig. 6-35).

6.6 USB Operations (Load from Device)

Typically, if the version on the USB device is newer than the one currently installed files will automatically transfer from the USB device when it is inserted in the ODK. These menus can be used to manually force a transfer of a specific file to the ODK memory.

6.6.1 Load Configuration from Device

Configuration files are used to set specific values and parameters for interior lighting, GPIO configuration and enabling system applications. To access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the USB Key to access the USB Operations menu. Remove USB port cover and insert the Config & MTU Flashdrive into the USB Port (note the USB inserted Icon in the upper right corner).


Figure 6-36. USB Operations Menu

From the USB Operations menu (see Fig. 6-36) press the LOAD Key to access the Load From Device menu (see Fig. 6-37).

Figure 6-37. Load. From Device   **Figure 6-38. Load Config. Complete**

From the Load From Device menu (see Fig. 6-37) press the CONF Key to initiate the Load Config From Device command.

After approximately 60 seconds the Configuration file download will be complete and the ODK will prompt you to press OK; this will return you to the Install Selected Files menu (see Section 6.7) to complete the install.

6.6.2 Load Message Listing from Device

A Message listing contains the actual route data displayed on the head signs. Only one message listing may reside in ODK4 memory at a time. To transfer a new message listing into the ODK, access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the USB Key to access the USB Operations menu. Remove USB port cover and insert the Config & MTU Flashdrive into the USB Port.

Figure 6-39. USB Operations Menu

From the USB Operations menu (see Fig. 6-39) press the LOAD Key to access the Load From Device menu (see Fig. 6-40).
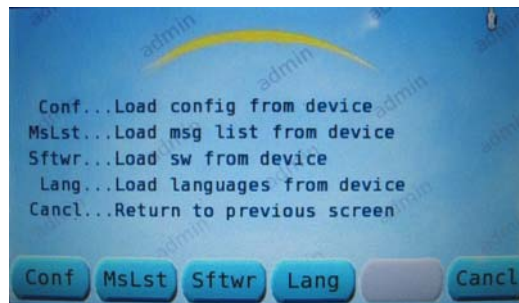
Figure 6-40. Load From Device Menu

From the Load From Device menu (see Fig. 6-40) press the MSLST Key to initiate the Load Message List From Device command (see Fig. 6-41).
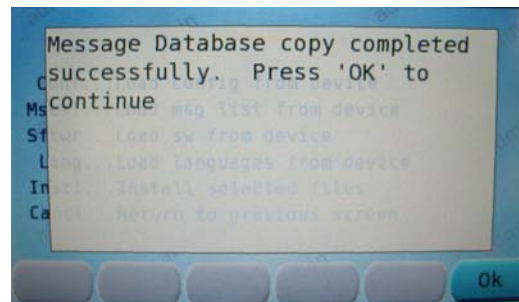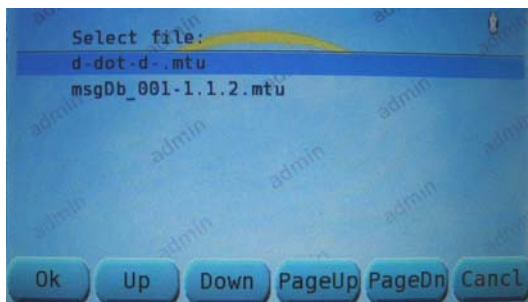
Figure 6-41. Load Msg. List From Dev. Figure 6-42. Load Msg. List Complete

Immediately after pressing the MSLST Key (see Fig. 6-41) the ODK will begin loading the new Message Listing. (If there are multiple listings to choose from, use the UP/DOWN Keys to choose the file you want to download and press OK.)

After approximately 60 seconds the Configuration file will complete the download from the flashdrive and the ODK will prompt you to, "Press OK to continue;" this will return you to the Install Selected Files menu (see Section 6-7) to complete the install.

6.6.3 Load Software from Device

Operational software (Kernel and RamDisk) may occasionally be updated to allow new features. To access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the USB Key to access the USB Operations menu. Remove USB port cover and insert the OS flashdrive into USB Port.

Figure 6-43. USB Operations Menu

From the USB Operations menu (see Fig. 6-43) press the LOAD Key to access the Load From Device menu (see Fig. 6-44).
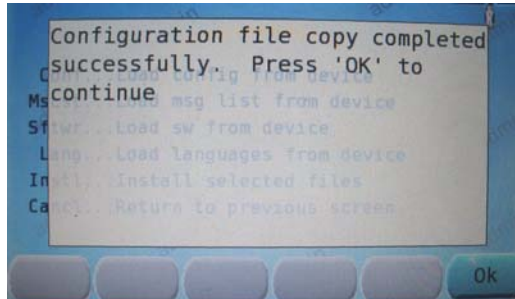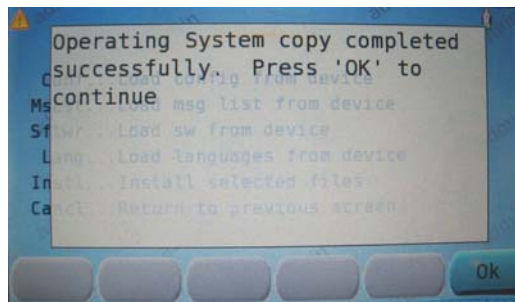

Figure 6-44. Load From Device Menu   Figure 6-45. Load Operating Software File

From the Load From Device menu (see Fig. 6-44) press the SFTWR Key to initiate the Load SW From Device command (see Fig. 6-45).

After approximately two minutes the Operating System file download will be complete and the ODK will prompt you to press OK; this will return you to the Install Selected Files menu (see Section 6-7) to complete the install.

6.7 Install Selected Files

After downloading any upgrade (Configuration File; Message Listing; or Operating System Software) you'll be returned to the Install Selected Files menu (see Fig. 6-46) to initiate the final install of the upgrade.

From the Install Selected Files menu (see Fig. 6-46) press the INSTL Key to open the Perform Upgrade window command (see Fig. 6-47).

Figure 6-46. Install Select Files Menu
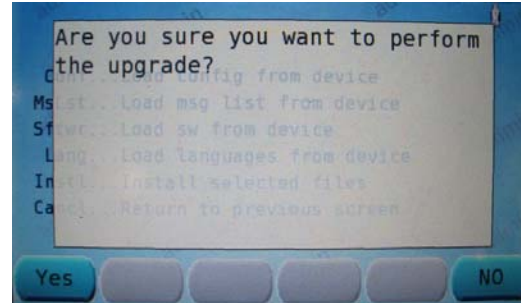
Figure 6-47. Perform Upgrade Window

From the Perform Upgrade window (see Fig. 6-47), press YES to begin the upgrade installation.

Figure 6-48. Remove USB Device
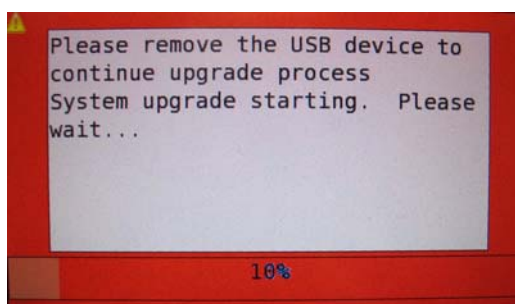
Figure 6-49. System upgrade starting

Remove the USB stick at the prompt (see Fig. 6-48), and the upgrade process will initiate automatically. A progress bar will appear at the bottom of the screen (see Fig. 6-49) for each file being installed. This process may take up to five minutes depending on the number of files being installed.
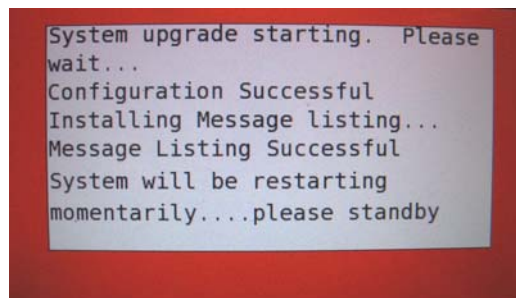
Figure 6-50. System upgrade Successful

You should see an acknowledgement that each file downloaded has been installed successfully (see Fig. 6-50), the system will then automatically reboot and be ready for normal operation upon completion.

6.7 Calibrate the Touchscreen

To access the Maintenance Menu see Figures 6-1 through 6-4.

From the Maintenance Menu (see Fig. 6-4) press the Calib Key to access the Calibrate the Touchscreen window (see Fig. 6-51).
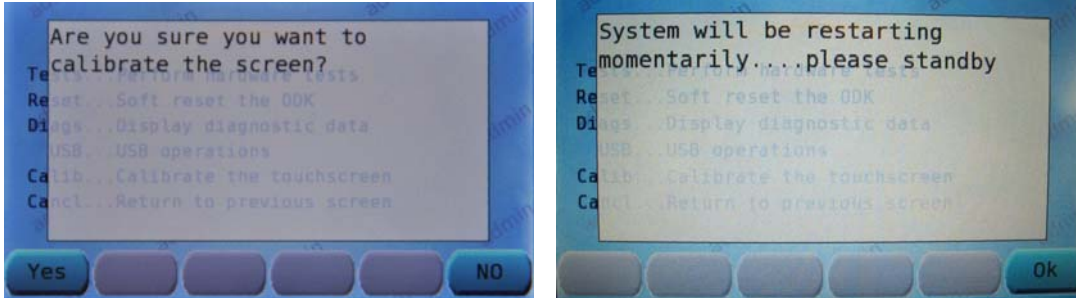
Figure 6-51. Calibrate the Touchscreen Figure 6-52. System Restart Screen

From the Calibrate the Touchscreen window (see Fig. 6-51) press the YES Key to initiate a full system restart (see Fig.6-52) which will bring up the Calibration Screen
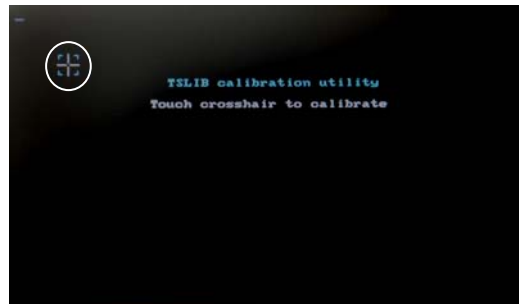
Figure 6-53. Calibration Screen

The Calibration Screen (see Fig. 6-53) will display a cross-hair in the upper left corner of the screen (see circle). Touching the cross-hair will make it disappear and then reappear on the top right; then to the bottom right, bottom left, and lastly the center (with each successive touch). Touching the center cross-hair will cause the system to reboot; following which it will be ready for normal operation.

SECTION 7
MAINTENANCE AND TROUBLESHOOTING

7.1 Introduction

This section provides ODK/sign system maintenance, cleaning, and troubleshooting instructions. It also contains instructions for light stick removal and replacement. For ODK removal and replacement see Section 2.

7.2 Maintenance

The ODK4 does not require any special cleaning or maintenance. The only cleaning requirement is to avoid cleansers, solvents, rags, or brushes that might scratch or damage plastic surfaces and seals. Clean with a clean rag; air gun set at low pressure; or a vacuum. No other maintenance is required.

7.3 Troubleshooting

The following tables provide troubleshooting guides for the ODK4 and the direct lighting (if necessary, please consult the Horizon™ or Spectrum™ Manuals for more in-depth sign troubleshooting). If the problem is not solved, contact your Luminator representative.

CAUTION

BEFORE REMOVING OR REPLACING PARTS, ENSURE POWER IS OFF TO SIGN SYSTEM.

Many ODK screens are password protected to avoid unauthorized changes to the ODK configuration. Once the correct password has been entered, the term "Admin" will be painted diagonally across the background. To exit "Admin" functionality, enter a new destination code or cycle power to the ODK.

7.3.1 Operator's Display and Keyboard (ODK4) Troubleshooting

Table 7-1. ODK4 Troubleshooting

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
No ODK4 display indications.	No voltage to ODK.	Check for proper cable connections from sign system to J1 pins 1 and 2 on the ODK. (J1 pins: 1 [batt]; 2 [switch]; 4 [ground]) Repair or replace connectors or cable.
	Defective ODK.	Replace ODK.
No ODK4 message or code entry indications of any kind.	Defective ODK.	Momentarily turn off power to sign system/ODK. If operation is not restored upon power activation, replace ODK.

Table 7-1. ODK4 Troubleshooting

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
"Exceeded Range" or "Invalid Message Code" indication appears on display.	Invalid message code entry with respect to programming.	Enter a valid DEST code. Remove invalid P/R message (P/R, 0, ENTER). Update programming. Restore sign system to operating condition. Replace ODK.
ODK4 display is too dim.	Auto-Adjust Brightness is enabled in a dark environment. ODK Minimum Brightness is set too low for conditions.	Config\Disp\Scrn - use NEXT to select Auto-Adjust Brightness, then use the Left/Right arrows to remove the checkmark. Press SAVE to retain the settings. Config\Disp\Scrn - use NEXT to select Minimum Brightness, then enter a new value. Press SAVE to retain the new settings.
Emergency mode not being displayed on exterior signs.	Emergency mode not enabled in ODK configuration. Emergency Mode not defined in the Message Listing.	Config\Misc\Emerg\Enable - select ENABLE and press ENTER. Update message listing contents to include the Emergency Mode displays.
Emergency mode shows momentarily on the exterior signs, but goes away immediately.	ODK configured for the wrong emergency cancellation mode.	Config\Misc\Emerg\Mode – select DSABLE to turn off the 'Automatic Off" mode.
ODK4 not communicating with any signs.	ODK Communication failure. Incorrect Message Listing, or signs are not included in the Message Listing.	Reset power to ODK and confirm sign communication is restored. Confirm signs are included in the message listing database. Confg\Disp\Sign - use the Up/Down or PageUp/PageDn to scroll through the list of sign configurations (shown as Pixel Width and Pixel Height). Confirm the signs for this bus are included in the program. Note the ADDR for the particular sign that is not responding. Go to Stat\Sign - check the ADDR for the particular sign. The ODK display shows the number of Received and Transmitted messages between the ODK and the sign. If the ODK shows TX MSGS, but no RX MSGS, please consult the appropriate sign maintenance manual for troubleshooting the sign. The ODK operation can be confirmed by removing the ODK and checking it on a known working sign system.

Table 7-1. ODK4 Troubleshooting

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
ODK4 not communicating with a particular sign.	Sign communication problem.	The ODK will send data to each sign after a valid message is selected. The Communication LED on each sign will indicate the data communication as a series of quick pulses while communicating with the ODK. If some signs are communicating, please refer to the Sign troubleshooting guide of the appropriate sign manual.
USB Device Not Recognized.	Failure Reading USB Device.	If the USB Icon is not displayed after 20 seconds, remove the USB drive, wait 10 seconds and re-insert the device.
ODK4 will not load new software from the USB memory device.	The file on the USB device is already loaded on the ODK.	To manually load the software from the USB, press Maint\USB\Load\ - select the file type you are trying to update.

Table 7-2. Direct Lighting Troubleshooting

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Quantum D Lighting won't come on (no lights turn on).	Defective ODK.	Replace ODK.
	No power to lighting system.	Check vehicle input power for lighting system.
	Incorrect ODK Configuration file.	Reload ODK Configuration file.
One particular Light Stick will not Dim.	Incorrect Jumper Setting.	Move Jumper from position "STP DIM" to "PWM".
	Defective PWA.	Replace Light Stick.
One particular Light Stick will not turn on.	Missing/Incorrect Jumper.	Replace missing jumper in the PWM location.
	Defective PWA.	Replace light stick.
Lights consistently DIM.	Ambient Lighting Sensor adjusting for Dark conditions.	Confirm photocell is not blocked from light. Use Confg\Dimng\Genrl to deselect "Automatically Adjust". Replace ODK.

7.4   Quantum Light Stick Replacement

7.4.1 Light Stick Removal Procedure

1. Access to the light stick assemblies is often times easier if the light panel is partially removed from the vehicle.

    *   Removal of the screws along the lower vent rail will allow easier access to the beauty strip that retains the lens in the Quantum core fixture.

2. Insert Pick Tool into notch directly below beauty strip; lift gently to release the end of the beauty strip from the pressure-fit groove and then peel it free. (Note the notch directly below it for the lens pressure-fit groove.)

3. Insert pick tool into notch below lens, and lift to release end of lens from pressure-fit groove. Raise lens, insert hammer handle or similar smooth non-metallic item under it and run it down the length of the light to release lens.

4. To remove the PWA cradle assembly, insert a flat blade screwdriver on the right side of the cradle and rotate it approximately 1/8 of a turn until it pops free, repeat on the left side and then the middle. Once freed, lift it out and unplug power connector.

7.4.2 Light Stick Reassembly Procedure

Note: The light stick assembly (including PWA circuit board, plastic cradle and heat sink material) is considered a single replaceable unit.

1. Plug in PWA assembly and re-insert the edge of the cradle under the lip in the fixture (in reverse of the way it was removed).

2. Using a flat blade screwdriver, press on the right side of cradle assembly to snap it back in place; repeat for the left side and center of cradle to seat it entirely.
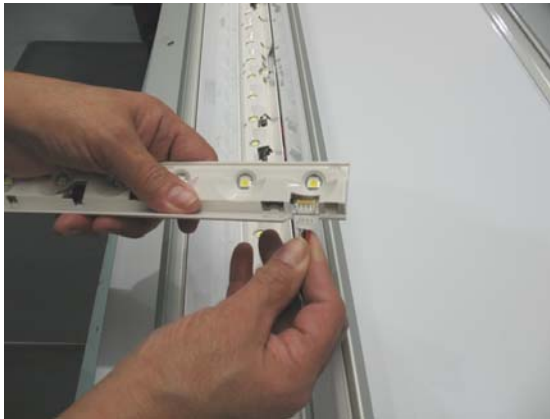
3. Apply power to the light fixture to verify operation.

4. If desired, the output of the replacement light stick can be adjusted to match the other light sticks in the same fixture using the P2 jumper and setting it for either 22% or 30%.

5. Hook edge of lens back into fixture grove; press on lens to reseat in pressure-fit groove.

6. Line up edge of beauty strip with end of fixture and press the strip in place. A plastic hammer may be used to seat the beauty strip.

APPENDIX A - FLOW CHARTS

A-3

Configuration
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(Section 4.1)
(cont.)

Misc
(Sect. 4.4)

VehID
(Sect. 4.4.1)

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Bzzr
(Sect. 4.4.2)

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Sound Mode

Emerg
(Sect. 4.4.3)

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(Sect. 4.3.3.2)

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(Sect. 4.5)

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Application Status

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GTI Sign Status

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(Section 6.1)

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Snsor
(Sect. 6.2.2) → Light Sensor Test

Blght
(Sect. 6.2.3) → Backlight Tests

Tchsc
(Sect. 6.2.4) → Touchscreen Tests

Bzzr
(Sect. 6.2.5) → Audible Buzzer Tests

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(Sect. 6.3) → Soft Reset the ODK

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(Sect. 6.4)

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(Sect. 6.4.1) → Quant D Diagnostics

ODK
(Sect. 6.4.2) → View ODK Diagnostic Counts

Signs
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(Section 6.1)
(cont.)

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(Sect. 6.5)

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(Sect. 6.5.1)

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(Sect. 6.5.1)

Save Syslog to
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Save Config to
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Save Msg List to
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Load Msg
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Install Selected
Files (Sect. 6.7)

Sftwr
(Sect. 6.6.3)

Load Sw
from Device

Install Selected
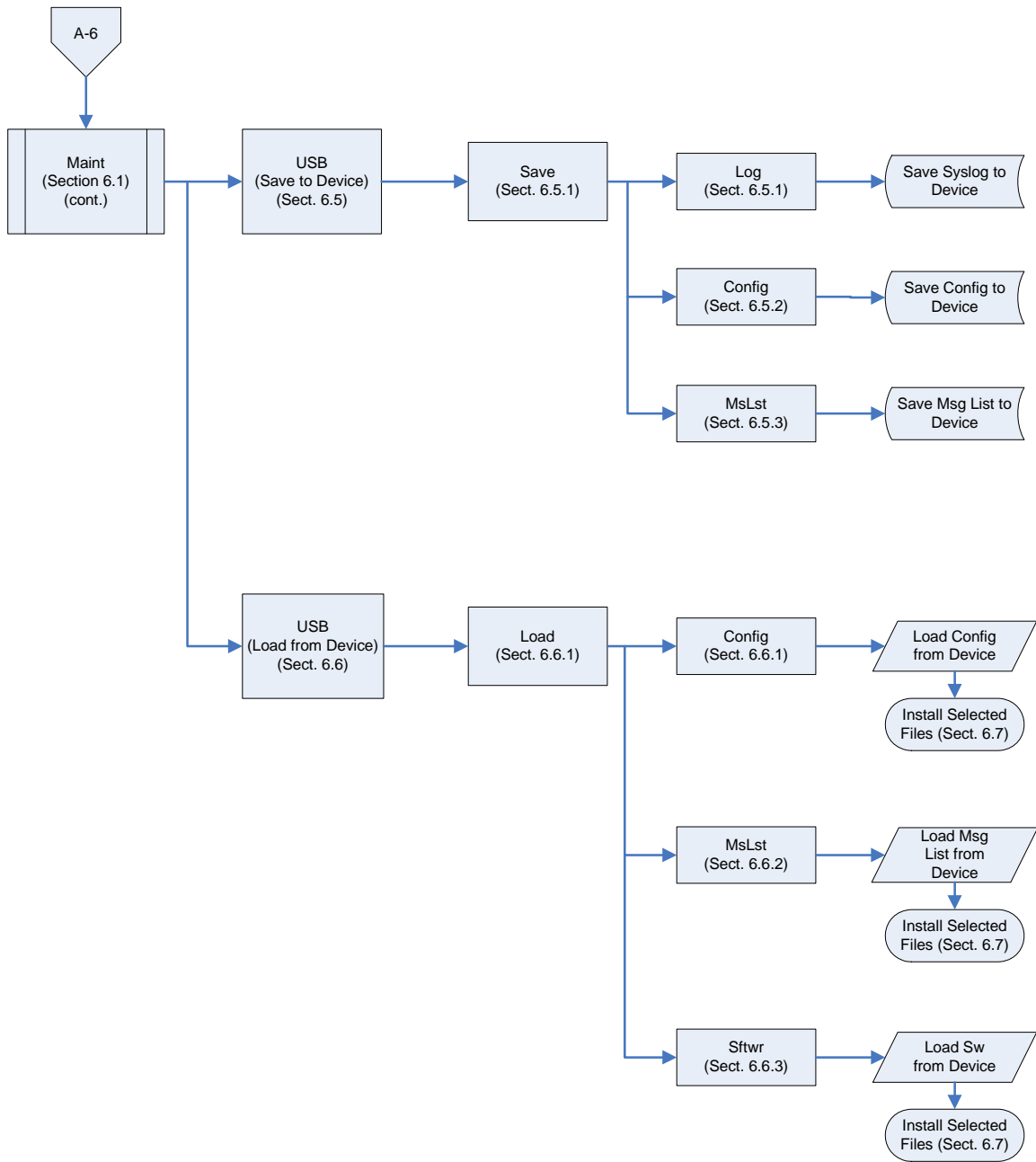Files (Sect. 6.7)

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