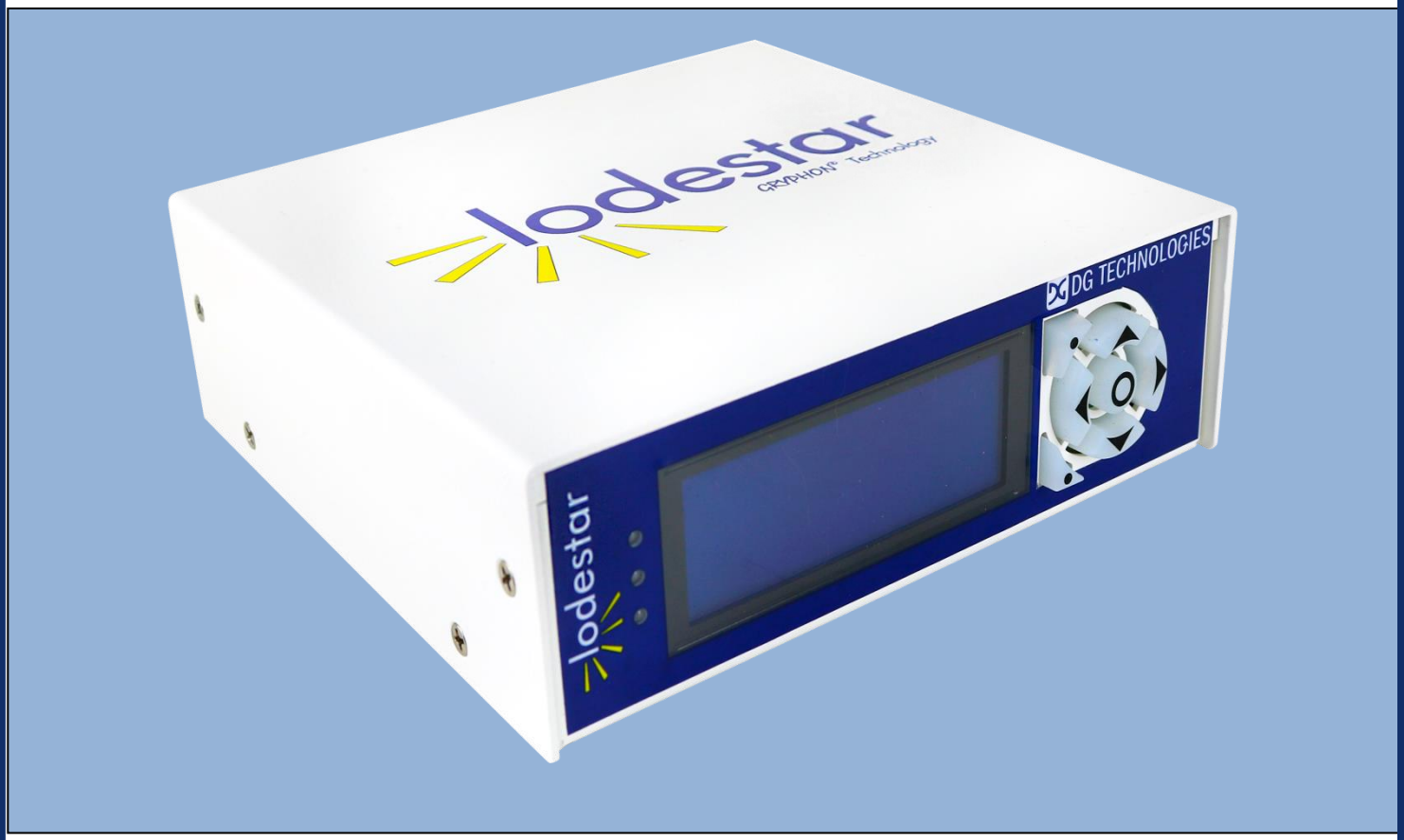
DG TECHNOLOGIES
Vehicle Network Solutions

lodestar®

USER MANUAL



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IMPORTANT

It is essential that you read this document carefully before using the hardware.

Damage caused by misuse of the hardware is not covered under the seller’s product warranty.

When using this manual, please remember the following:

- This manual may be changed, in whole or in part, without notice.
- Dearborn Group Inc. assumes no responsibility for any damage resulting from any accident--or for any other reason--while the hardware is in use.
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This manual contains the following sections:

Section 1 – Introduction – Provides an overview of the manual, summarizing the contents of the remaining sections and appendices. Also, provides a reference to related documentation and technical support resources.

Section 2 – Hardware Overview / Getting Started – Describes key features of the lodestar® hardware.

Section 3 – Configuring the Host PC Connections – Describes how to set up the USB and Ethernet connections, IP address and how to modify the lodestar® TCP/IP parameters.

Section 4 – On Board Web Pages – Describes the onboard web page interface along with available utilities and their use.

1 Introduction

The Lodestar family of hardware interfaces provides remote connectivity for multiplexed automotive and automation communication networks. These products use an Ethernet or USB connection to the user's PC to provide a high-speed user interface for applications such as diagnostics, monitoring, and troubleshooting, as well as for custom applications. An embedded Linux operating system and standard Transmission Control Protocol/Internet Protocol (TCP/IP) services ensure inter-connectivity with many existing PCs, workstations, and network hardware systems.

The LODESTAR® includes the following features:

User interface

- Web-page interface
- LCD and Keypad

Hardware

- Processor: ARM Cortex A8, 1 GHz core speed.
- RAM: 512 Mbytes SDRAM
- NAND Flash Memory: 512 Mbytes
- Internal storage: Micro SD card, to 64 GBytes
- One RJ45 Ethernet connector
- Two USB Type A Host connectors on the front of the unit for USB peripherals
- One USB Device Type B connector on the front of the unit for connection to a Host PC
- 6 Channels of High Speed CAN / CAN FD
- 1 Channel Single Wire CAN
- 1 Channel Fault Tolerant CAN
- 2 Channels LIN

Software

- Linux OS
- On-board Web server
- TCP/IP support of standard services into the LODESTAR® (FTP, SSH, etc.)
- Protocol drivers and applications

Users can utilize one of DG's existing PC programs, or write their own client based or stand-alone applications for communication with the hardware.

The LODESTAR® utilizes the Gryphon® Communication Protocol, which is a client/server communication protocol specification that defines the format of messages passed over a TCP connection between the LODESTAR® and a client.

Typical applications for the LODESTAR® include:

- PC-to-vehicle network adapter.
- Stand-alone node running custom applications.
- LAN gateway to one or more vehicle networks.
- End of Line (EOL) test applications

1.1 Technical support

In the U.S., technical support representatives are available to answer your questions between 9 a.m. and 5 p.m. EST. You may also fax or e-mail your questions to us. Include your voice telephone number for prompt assistance.

Phone:	(248) 888-2000	E-mail:	techsupp@dgtech.com
Fax:	(248) 888-9977	Web site:	http://www.dgtech.com/tech-supp/

1.2 Related documents

For further information regarding programming with the hardware, you may wish to consult one or more of the following resources:

Dearborn Group Inc. – Phone: (248) 888-2000

Linux-related Web sites:

Introductory Linux information; a good place to get started.	http://www.linux.com/
Linux Documentation Project - Regularly updated HOWTOs and FAQs	http://www.tldp.org/
General Linux Q & A discussion board (with searchable archives)	http://www.linuxquestions.org/
Linux Foundation	https://www.linuxfoundation.org/

2 Hardware Overview / Getting Started

Please read this section before using your hardware. It describes the hardware information necessary for successful installation and operation. Each section describes an individual hardware configuration. Once you understand your hardware connection, move to **Section 3** for connecting to your PC via Ethernet or USB.

2.1 Contents of the LODESTAR® Package

2.1.1 LODESTAR® Hardware provided

- LODESTAR® unit
- 12 VDC Universal A/C power adapter
- RJ45 Ethernet cable – The LODESTAR® is shipped with a standard Cat5e Ethernet cable. **(Note that the hardware can detect and switch to use either type of cable: straight-through or cross-over.)**
- Optional Wi-Fi USB adapter
- Open ended cable with HD15 male connector

2.1.2 LODESTAR® Software provided

Installation program with:

- 32-bit C, C++ and VB libraries and samples
- J2534 API and samples
- LODESTAR® User Manual (PDF)
- Various utility programs
- Hercules Analyzer Software
- Data Logger Software

The Installation Programs and Documentation are provided on a Virtual USB drive, which is mounted to your PC when the LODESTAR unit is connected via a USB cable. The LODESTAR will power on when it is connected to a Host PC via a USB cable.

After the LODESTAR has booted, you will see in Windows file explorer that a new USB mass storage drive has appeared. It is named “BEACON_USB”. This USB mass storage drive will act like any other USB drive. You can copy files to it or from it.

See the separate document “Software Installation Quick Start Guide” for more information.

2.2 Hardware specifications / setup

2.2.1 LODESTAR® hardware specifications

Overall dimensions Height: 2.25 in.
Width: 7.25 in.
Depth: 7.00 in.

Electrical Typical current: = 250 mA at 12.0 VDC input

Input voltage
Minimum operational input voltage: 6 VDC
Maximum input voltage: 32 VDC

2.2.2 Power connection

The LODESTAR® can be powered via:

- The power jack on the back panel (12 VDC adapter is provided).
- The specified power pins on one of the network connectors.
- USB connection to a Host PC Note 1

The LODESTAR® will automatically begin the boot up process when power is applied.

Note 1:
When the LODESTAR is powered by only the USB connection the LCD front panel display and the CAN and LIN circuitry will not function. You can access the onboard web page and configure settings.

Please Note:

- For details related to the power jack, please see section 2.3.5 Power jack connector.
- For details related to powering the unit from one of the network modules, please see section 2.3.9 Vehicle Network Connection.

2.2.3 Vehicle Network connections

The LODESTAR® has a total of 8 CAN channels and 2 LIN channels. These network channels are built into the Lodestar. The CAN channels are dedicated to certain versions of CAN, as shown below.

- CAN channels #1 to #6 support High Speed CAN, including CAN FD
- CAN channel #7 supports Single Wire CAN [Note 2]
- CAN channel #8 supports Fault Tolerant CAN [Note 2]

Note 2: A factory option is available to convert CAN channels 7 and 8 into High Speed CAN/CAN FD Channels. Please contact our sales department for more details about this option.

The pinout information for the vehicle connectors in your Lodestar is shown in table 1 below, and it also may be found in the internal web pages of the Lodestar.

2.3 Hardware overview

Figure 1 LODESTAR® Display Panel:

2.3.1 LODESTAR Display Panel

The Lodestar product has on the Display Panel an LCD display with 3 LED indicators, a membrane keypad, and an internal audio beeper. The LCD will display useful information about the Lodestar device. The keypad may be used to navigate through the various pages of the LCD display.

! Note that the LCD display will only be active if the Lodestar is powered by a 12 VDC power source. This may be either the external 12 VDC wall adapter or through one of the vehicle network connectors. If the Lodestar is powered only by a USB connection to the host PC, then the LCD display will remain powered off. To use the LCD display, the Lodestar must be booted while powered on from a 12 V power source. If using the USB host connection, make sure the 12 VDC power source is attached first, and then plug in the USB cable.

2.3.1.1 LCD Display

The LCD is a back-lighted dot matrix display with a resolution of 192 x 64 pixels.

2.3.1.2 LED Indicators

There are three red/green LED indicators to the left of the LCD display. During boot up, these LEDs will all be on, displaying an orange color.

During normal operation, the top LED will be green and the other two LEDs will be off.
If the 'Identify' function has been invoked (Configuration>Device Name), then the bottom LED will flash red/green. In addition, the internal beeper (if enabled) will sound to help identify the Lodestar unit.

2.3.1.3 Keypad

The keypad may be used to navigate through the information pages on the LCD display.

Hold Button

Press the bottom left button with the dot symbol on it to stop the LCD display pages from scrolling. The middle LED will light up with an orange color to indicate the scrolling function has been disabled.
Press the Hold Button again to resume the scroll function.

UP/Down Manual Paging

When in Hold mode, you may Press the Up Arrow or Down Arrow to manually page through the main Menu screens.

Left Arrow

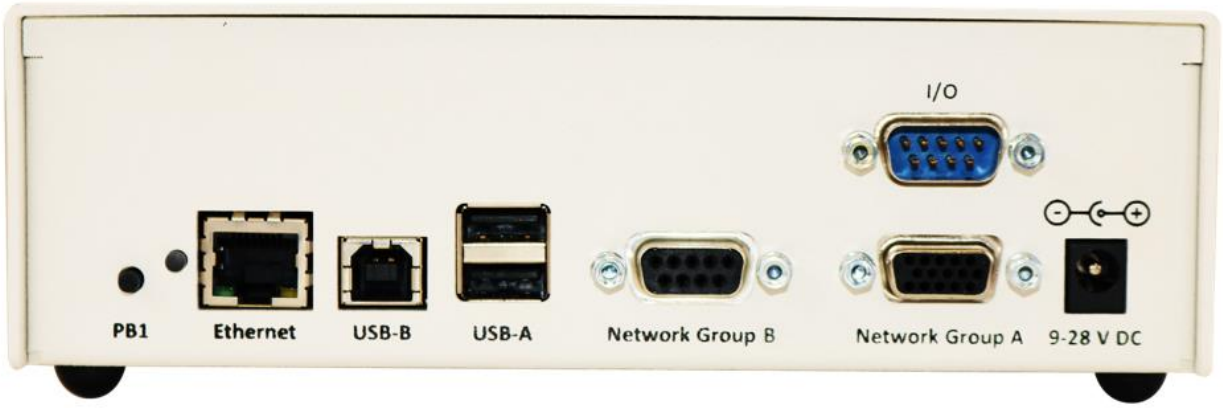
The left Arrow button will take you back to the Main Menu Screen of the display.

Right Arrow

The Right Arrow button will select a Menu Program to run.

2.3.2 LODESTAR Rear Panel

Figure 2 Connector Panel of the LODESTAR® unit:



2.3.3 Powering up the hardware

Apply a power source to the power jack connector (see Section 2.3.5 for details) or to one of the vehicle connectors (see Section Protocol Connections for details). The LODESTAR® will automatically power on and begin the boot up process.

2.3.4 Status indicator

There is a multi-color (RGB) LED indicator on the connector panel. This LED indicator will provide information about the state of the LODESTAR®.

LED colors:

- Solid Green: Normal boot up
- RGB cycling: Normal operating condition
- Alternating red/blue at 2Hz: Unit identify function has been triggered (from web page-configuration -> device name -> Turn Identify ON)
- Solid Yellow: Default settings are being restored
- Solid Purple: Reflashing in process
- Solid Blue: Reflashing failed / other error

2.3.5 Power jack connector

One way of powering the LODESTAR® is through the standard 2.5 mm x 5.5 mm power jack (with positive center pin). The LODESTAR® operates with an input voltage between 6 and 32 VDC. Typical operating voltage supplied by the included power adapter is 12 VDC.

Another means of powering the LODESTAR® is through the specified pins on one of the network connectors. (Please see section 2.3.9 for details.)

2.3.6 USB Type A connectors

The two USB type A connectors on the front panel allow the user to connect USB devices such as Memory sticks or Wi-Fi adapters to the LODESTAR®.

2.3.7 USB Type B connector

Your Lodestar product is equipped with a USB type B connector. The single USB type B connector on the rear panel allows the user to connect the LODESTAR® to a Host PC.

2.3.8 Ethernet RJ45 connection

A CAT5e RJ45 Ethernet cable is provided with the LODESTAR® tool package. This cable may be used to connect the Ethernet port on the front panel of the LODESTAR® to the Ethernet port on the host PC or hub.

Either a straight through or crossover cable may be used with the Lodestar. The LODESTAR® can detect which cable is being used and will accommodate the use of either cable.

The LODESTAR® supports 10/100 Ethernet.

2.3.9 Protocol Connections

The vehicle bus signals are provided on 2 different connectors.

There is a high-density 15 pin D connector, labeled ‘Network Group A’, and a 9 pin D connector labeled ‘Network Group B’. The pin numbers of the two connectors are shown in the table below.

You may also access pin out information on the “Pinouts” internal web page of the LODESTAR®.

Either the of the two connectors may be used to provide power to the LODESTAR® hardware.

Before applying voltage to pins marked **V + IN** and **V – IN/GND** (positive and negative), make certain that you have the correct pin out information for the network connector being used to power the unit.

Table 1 Network Group A

	HD 15 pin D connector Network Group A					
pin #	Function					
1				CAN 2 Lo		
2			CAN 1 Lo			
3					CAN 3 Hi	
4	SW CAN Lo (GND)	CAN FD 7 Lo (note 2)				
5	Signal GND					
6				CAN 2 Hi		
7			CAN 1 Hi			
8						CAN 4 HI
9						CAN 4 Lo
10	Power GND					
11					CAN 3 Lo	
12	SWCAN (Channel #7)	CAN FD 7 Hi (note 2)				
13		FTCAN Lo (Channel #8)	CAN FD 8 Lo			
14		FTCAN Hi (Channel #8)	CAN FD 8 Hi			
15	Vin#1 (Vbatt) (fused)	Note 1:				

Note 1: The Lodestar may be powered by either of the Vin#1 or Vin#2 inputs. Only one of these are required if the 12 VDC Wall Adapter is not used . Vin#1 and Vin#2 are isolated internally by blocking diodes. See the User Manual.

Note 2: The Lodestar may be ordered with a factory option to convert CAN channels 7 and 8 to high-speed CAN/CAN FD. Please contact DG Technologies Sales Department for more details.

Table 2 Network Group B

	9 pin D connector Network Group B			
pin #	Function			
1		CAN 6 Lo		
2	CAN 5 Lo			
3			LIN CH 1	
4	Power GND			
5	Power GND			
6		CAN 6 HI		
7	CAN 5 HI			
8				Lin CH 2
9	Vin#2 (Vbatt) (fused)	Note 3:	Vbatt for LIN	

Note 3: When using the LIN channels, Vbatt (+12VDC) must be supplied on pin 9, even if the Lodestar is powered from another source.

This 12VDC input would usually be the same 12VDC source used to power the target LIN device.

Pin 9 will power the entire Lodestar if 12VDC is applied. See the User Manual.

2.3.10 I/O Connections

There is a 9 pin D connector labeled 'I/O'. This connector provides one trigger input and two trigger output signals, as well as clock and data for an IIC serial connection.

The Trigger Input and Trigger output signals are 3.3V logic level signals.

The IIC Clock and Data signals are 3.3V logic level signals.

The Trigger and IIC Inputs and Outputs may be used by User Developed applications hosted on the Lodestar unit. Please contact DG Technologies Tech Support for details if you wish to create your own applications using the I/O signals.

The pin numbers of the I/O connector are shown in the table below.

Table 3 Input/Output Group

	9 pin D connector I/O Group
pin #	Function
1	**GND**
2	**Trigger Input**
3	**GND**
4	**Trigger Out #2**
5	**GND**
6	**Trigger Out #1**
7	**IIC clock SCL**
8	no connect
9	**IIC Data SDA**

3 Configuring the Host PC Connections

To access information externally from the hardware, a communication connection to the LODESTAR® must be established via a USB, wired Ethernet, or Wi-Fi link. This connection will allow you to send and retrieve data, execute an onboard application, or run one of the DG applications.

3.1 USB Connection to the PC

You must have access to a PC with a USB connection. The LODESTAR supports a USB 2.0 high speed connection and has a full-sized USB type B connector for this connection.

A standard USB cable is provided with the LODESTAR® package. This cable connects the USB port on the front panel of the LODESTAR® to the USB port on the host PC.

The LODESTAR uses RNDIS on the PC to provide a TCP/IP communication path between the LODESTAR and the PC. The Lodestar will act as a DHCP server and assign an address to your PC.

Every Lodestar USB connection has a unique, static IP address based on an internal serial number, which is used with the RNDIS connection. This unique IP address is printed on the serial number label on the bottom of the Lodestar package. In addition, you can see it listed on the opening page of the internal Lodestar web page. It is a fixed address and cannot be changed.

The Lodestar will act as a DHCP server for the RNDIS connection. Your PC will have an IP address automatically assigned to it during the initial connection. The address will be of the form 10.X.X.X and the address assigned is unique to each Lodestar.

For more information about the RNDIS and Windows, see the separate document titled “Beacon RNDIS Driver Installation QuickStart”

3.2 Wired Ethernet Default IP address

Ethernet communicates by having each individual device on a network using a unique Internet Protocol (IP) Address. Along with these addresses, there are the Netmask, Broadcast and Default Route Addresses to configure.

The Lodestar hardware has predefined default parameter values. If you are using the tool in a point-to-point connection with your PC, these parameters typically do not need to be changed. You ***may*** need to change these default parameters, however, ***if your PC is not configured as a DHCP Client, or if you want to connect the LODESTAR® to a network.***

The default network configuration of the Lodestar is as a DHCP Server.

The following table lists the LODESTAR®’s default addresses:

Parameter name	***LODESTAR® default value***

IP (Internet Protocol) Address	192.168.001.001
Netmask	255.255.000.000
Broadcast	192.168.255.255
Default Route	192.168.002.001

Table 3.2: TCP/IP Settings

Note: To enable communication with a LODESTAR® unit at this address, the IP address of your PC must be configured to: **192.168.001.XXX,** where XXX is any value other than 001.

Prior to establishing a LODESTAR® connection with your building's existing LAN, you should contact your company's network administrator and coordinate new values for your LODESTAR®.

3.3 Configuring the wired Ethernet IP Address

To configure the hardware's TCP/IP Ethernet parameters for your wired connection, access the on-board Web server on the LODESTAR®, and utilize the Lodestar's Web page, which includes a configuration tool used to set IP parameters and passwords. The page may be accessed through any Web browser on a computer connected to the LODESTAR® unit.

Note: This option requires that the *current* TCP/IP parameters allow communication over the network.

If communication over the network is **not** possible (as is often the case when reconfiguration is required), then the TCP/IP parameters can be reset to the factory default settings (Server, with DHCP) by using the reset pushbutton.

3.4 Reset Pushbutton

The reset pushbutton is located on the front panel of the Lodestar, just to the left of the LED.

To reset the Lodestar settings to factory defaults:

- Power up the unit.
- When the LED on the front panel lights (Green), press and hold the button until LED turns Yellow. Yellow color indicates that defaults are being restored.

NOTE: The unit will also go through the restore-defaults process during the first boot, so you'll see a Yellow LED / longer boot time during the first boot after reflashing with a new firmware image.

Those parameters that can be reset, such as the Zeroconf name and the network settings, will be set back to factory defaults.

3.5 Firmware Updating

Firmware for the Lodestar may be updated using a USB memory stick.

The reflash file will be supplied as a compressed ZIP file. The ZIP file should be extracted to a convenient place on your PC. When the ZIP file is extracted it will produce a folder called “USBDrive”. The contents of this “USBDrive" folder should be loaded onto the root of an empty USB memory stick, formatted as a FAT 32 drive.

To initiate a USB reflash:

- With power off, insert the USB stick in one of the 2 USB ports on the front panel.
- Press and hold the pushbutton on the front panel, and keep it held while plugging power in.
- Keep holding button for ~10 sec; USB reflash will attempt to start. The LED will indicate the progress of the reflash operation.
- Solid Purple: Reflashing in process
- Solid Green: Reflashing complete
- Solid Blue: Reflashing failed / other error

After the reflash process has completed successfully, power cycle the Lodestar before using it again.

If the reflash was not succesful, you can try the proces again. The boot code within the unit is ot modified or deleted during the reflash process.

! Note that the reflash process does erase the contents of the internal uSD memory card, including any data or user programs stored there. Please be sure to back up any data or programs that need to be saved, before initiating the reflash process.

4 The Lodestar Internal Web Pages

The Lodestar hosts an internal web page that allows you to control many aspects of the Lodestar and to get information about the Lodestar. The following sections will walk you through the internal web pages and explain the various items. Please note that due to feature enhancements and software updates you may see slightly different versions of the web pages described below.

To access the internal web pages, use any web browser on your PC, such as Firefox, to access the Lodestar. Simply type the Lodestar's IP address into the address bar of the browser.

The Home page of the Lodestar web page will appear:

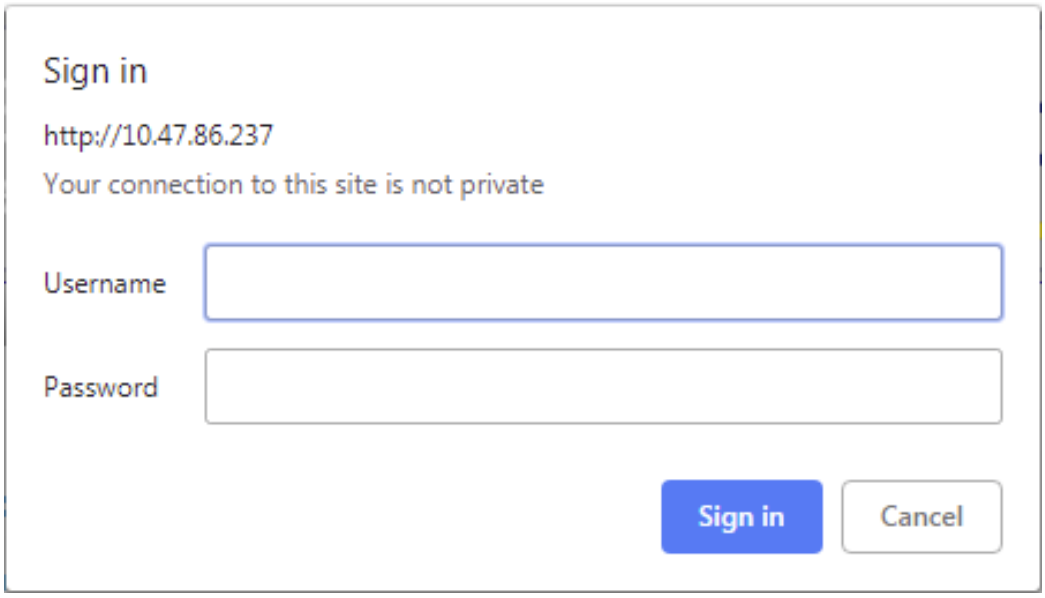
4.1 Home Page

Next, click on *Configuration*. Once you enter this section, a box will prompt you for a user name and password.

Please note: All inputs are case sensitive, and this password is the same as the default root password.

4.1.1 Login Screen

The default user name is *sysadmin*; the default password is *dgbeacon*



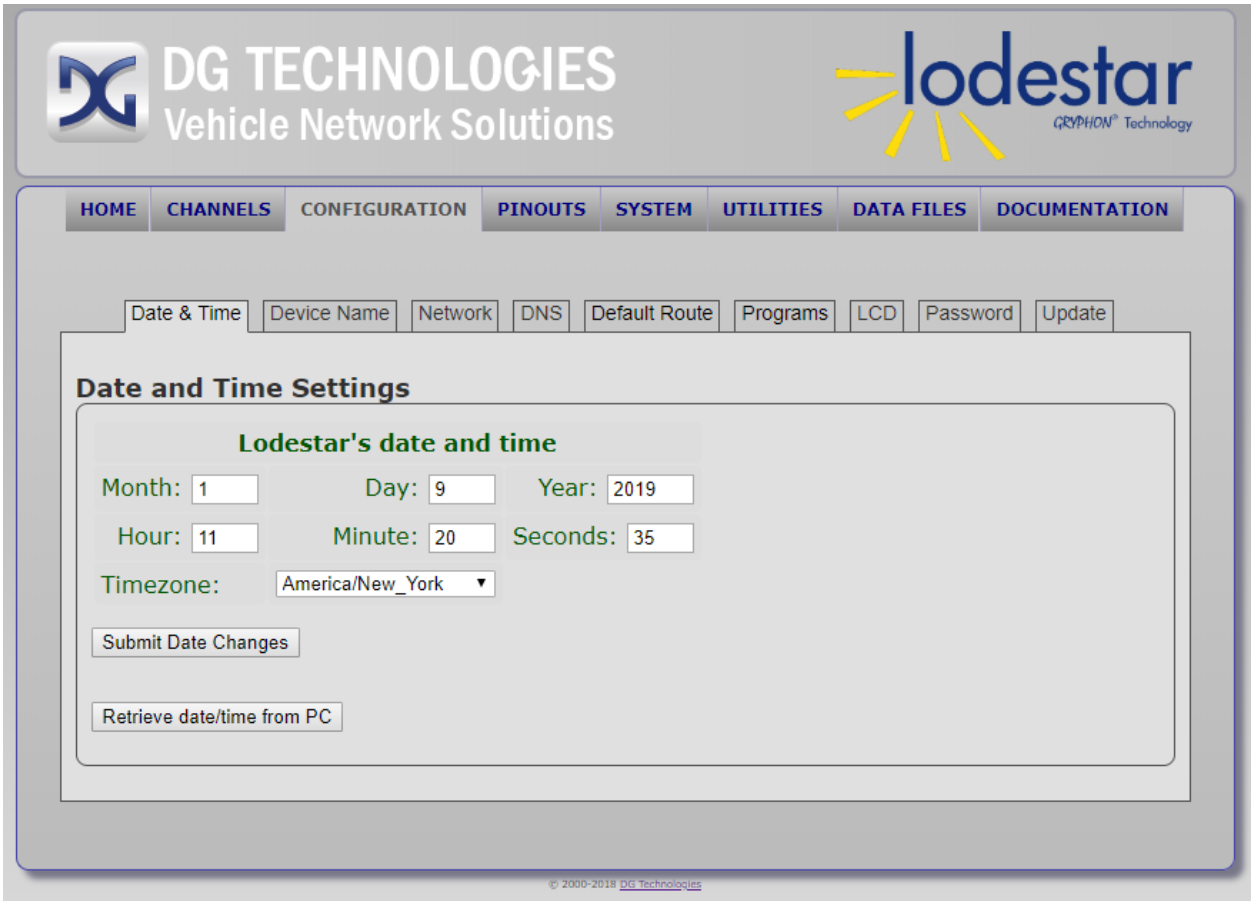
Once logged in, the **DG Lodestar System Administration** page will appear. On this page, you may: access the **DG Lodestar Configuration** page, configure the connection parameters, change the time and date, or change the sysadmin password.

The first entry is **Time and Date.** The other entries are: **Zeroconf Name & Device Locator, DNS Configuration, Default Route Configuration, Network Configuration, Startup Programs / Services, Change Sysadmin Password, and Optimization.**

4.2 Configuration Tab

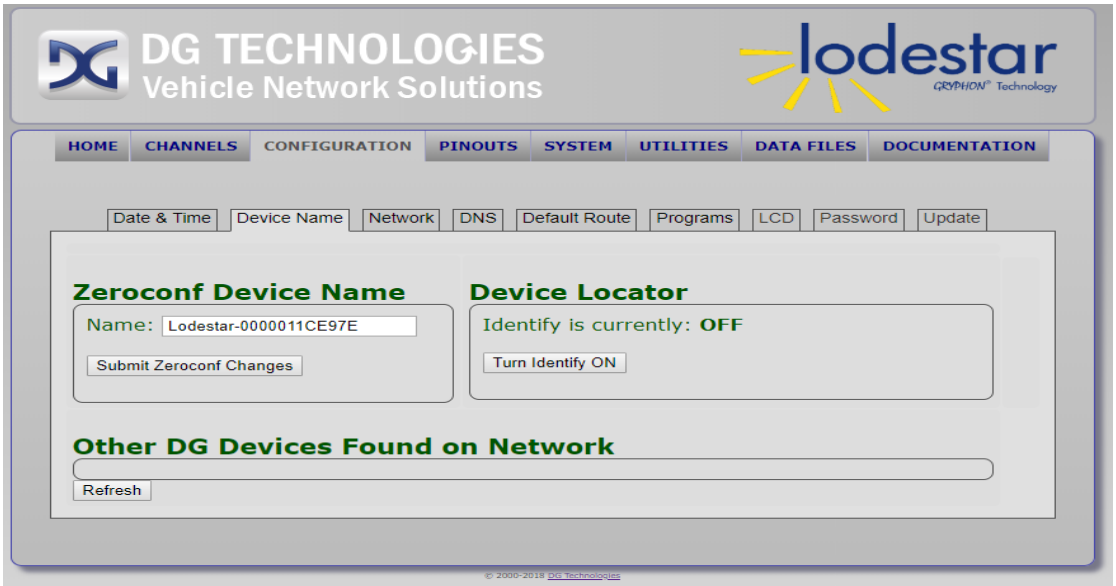
The configuration tab is the section for setting system parameters for the Lodestar.

4.2.1 Date & Time



- **Set Date and Time** – You can either have the Lodestar take the Date and Time from the host PC, or you can enter the new values manually. When you are done updating the Date and Time click **Submit Date Changes**. The new values and confirmation will then appear on the display.

4.2.2 Device Name Tab



* **Zeroconf Name & Device Locator** – Provides Zeroconf (Zero Configuration) Name change and Device Locator functionality.

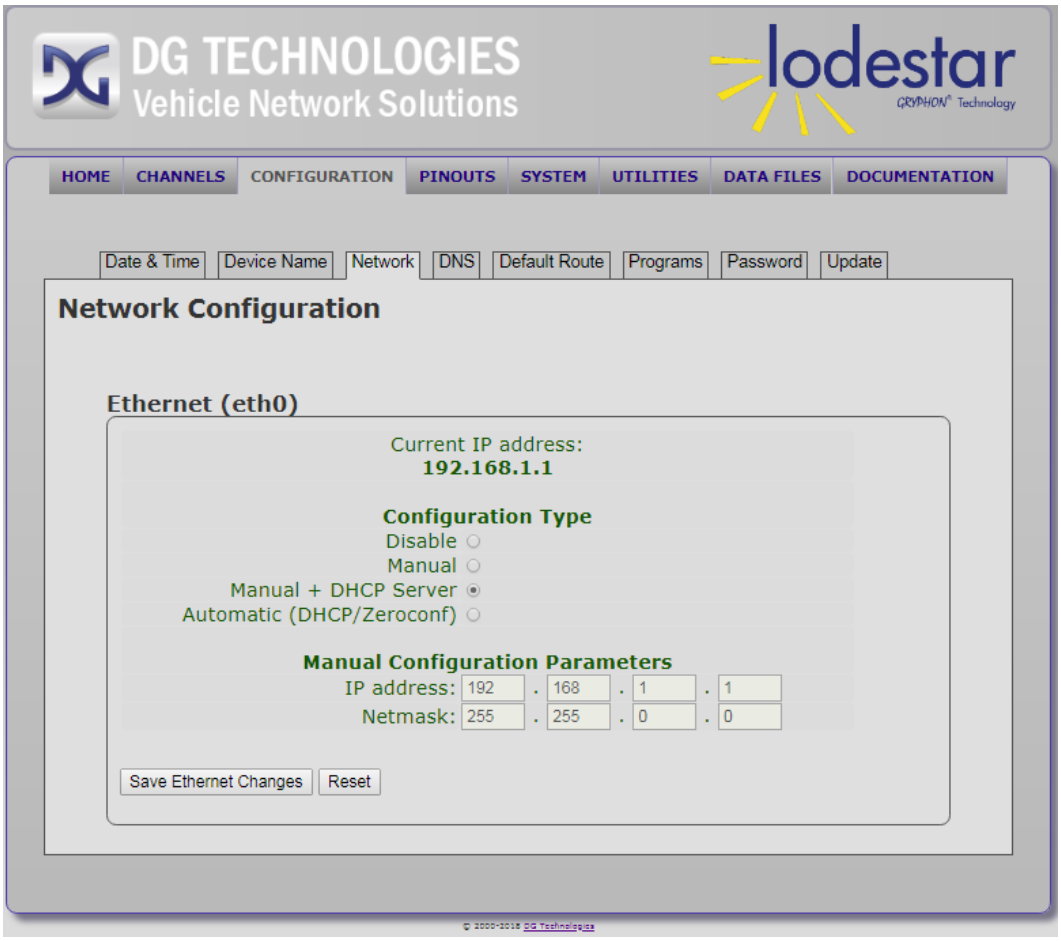
The name created is linked to the IP address for the unit.

The **Identify ON / OFF** key is useful when more than one LODESTAR® units are being used in the same proximity. With this function turned **ON,** there are three indications to help you identify the unit. They are:

- The LED on the connector panel will flicker rapidly.
- The bottom LED on the front LCD panel will flash red/green.
- The internal beeper in the LCD display will sound (if enabled).

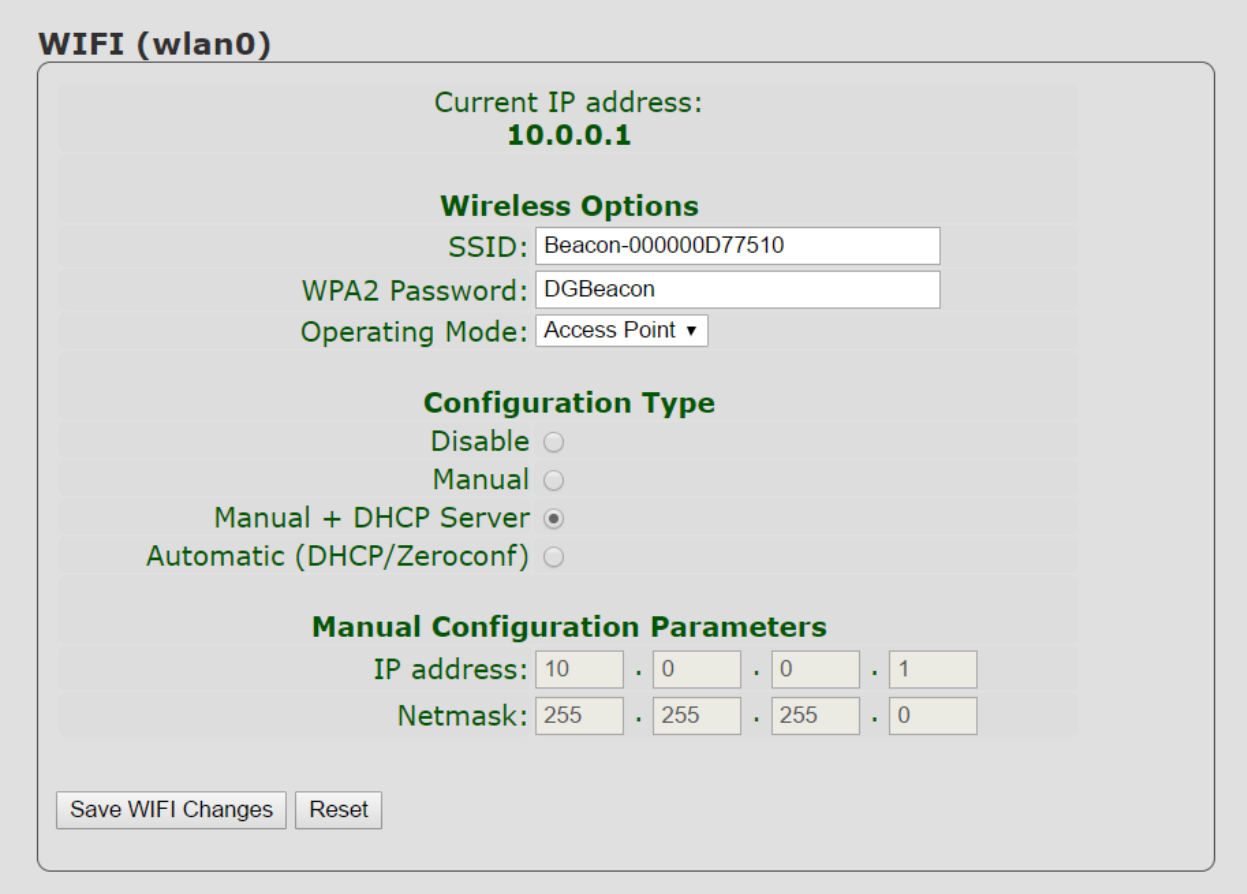
4.2.3 Network Tab

On this page you can set the network parameters for the wired Ethernet and the Wi-Fi connection (if present)

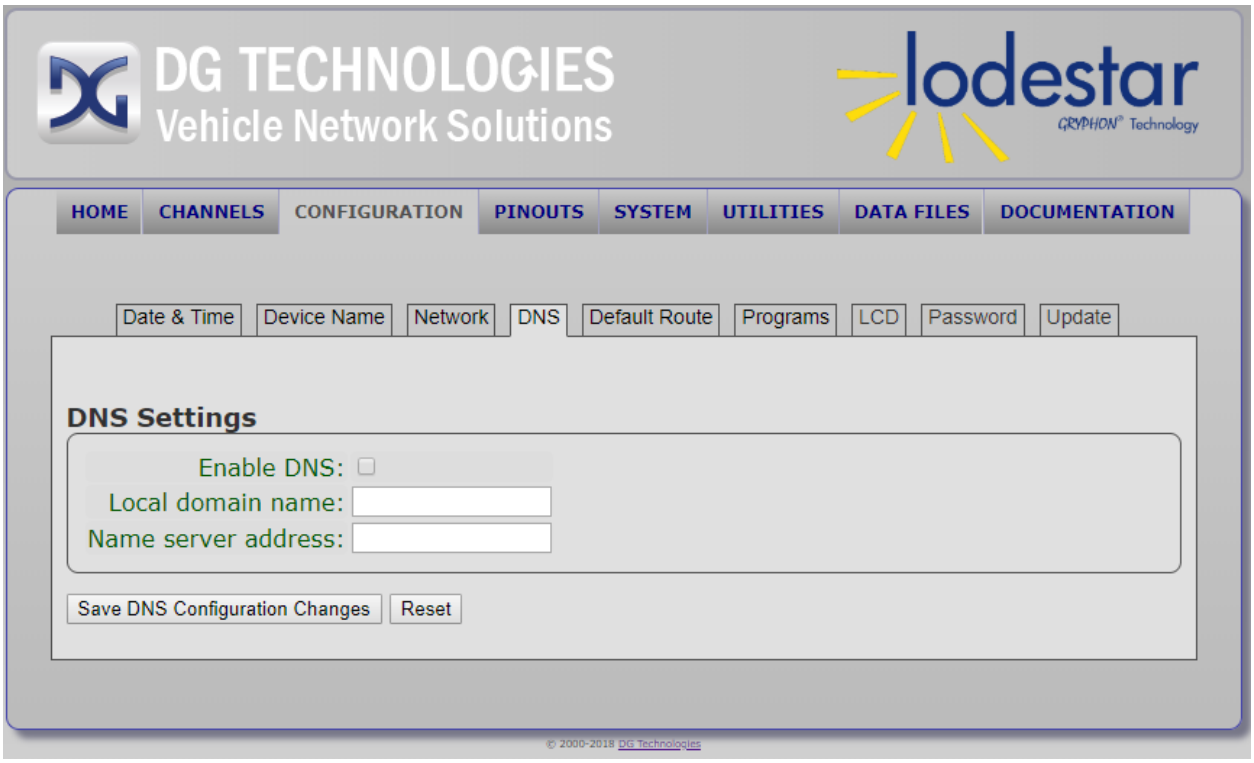


- **Network configuration** – Enter your configuration type (DHCP Client, Static or DHCP Server) and any Static Configuration Parameters, as necessary. To make changes, provide new values where necessary, and click **Save Ethernet Changes**. Then turn the LODESTAR® unit off and back on, (i.e., reboot), to invoke the changes. Clicking on **Reset** will display the previous settings.

Note: If equipped with an 802.11 b, g, or n adapter, a Wireless Configuration section will appear as indicated in the view shown below**.**



4.2.4 DNS Configuration



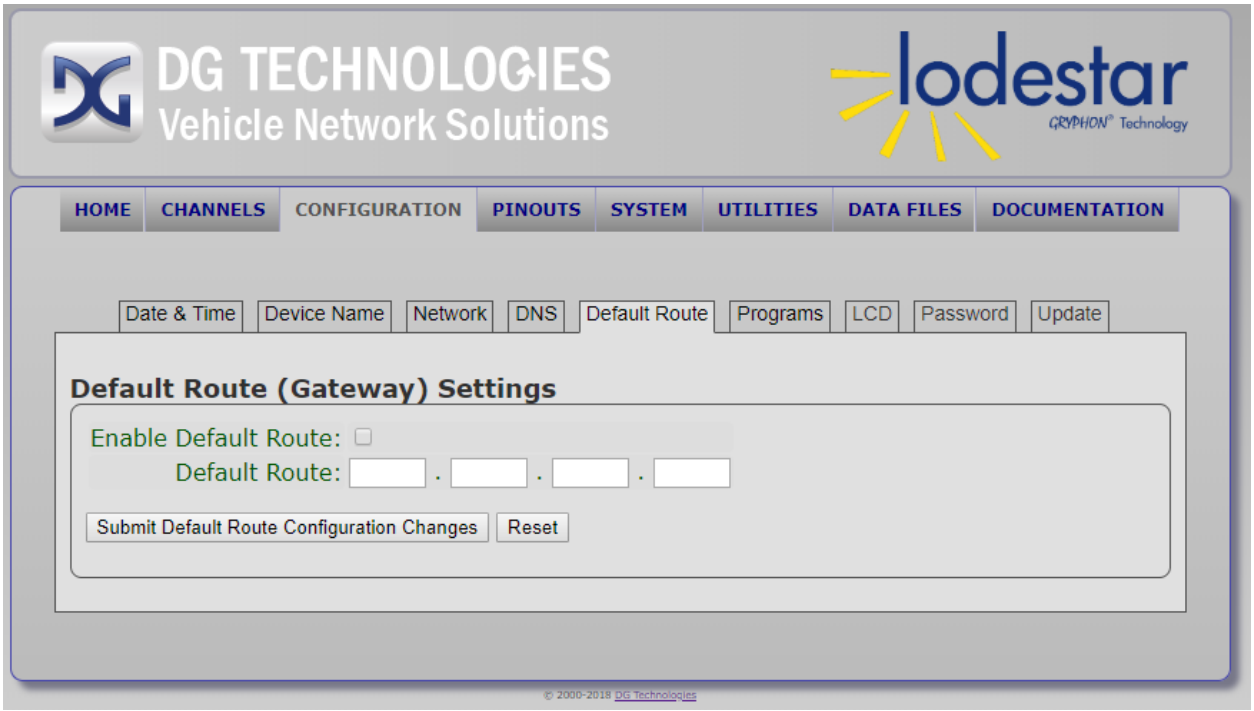
- **DNS Configuration –** The initial setting for DNS is Not Enabled.

  If you wish to use DNS on the Lodestar, check the Enable DNS box (Domain Name Service), fill in the required information and then click **Submit DNS Configuration Changes**. Confirmation of the changes will appear on the display.

  The Domain Name Service allows the user to resolve Domain names into IP addresses.

  The **Reset** button returns the **DNS Configuration Parameters** to the initial settings.

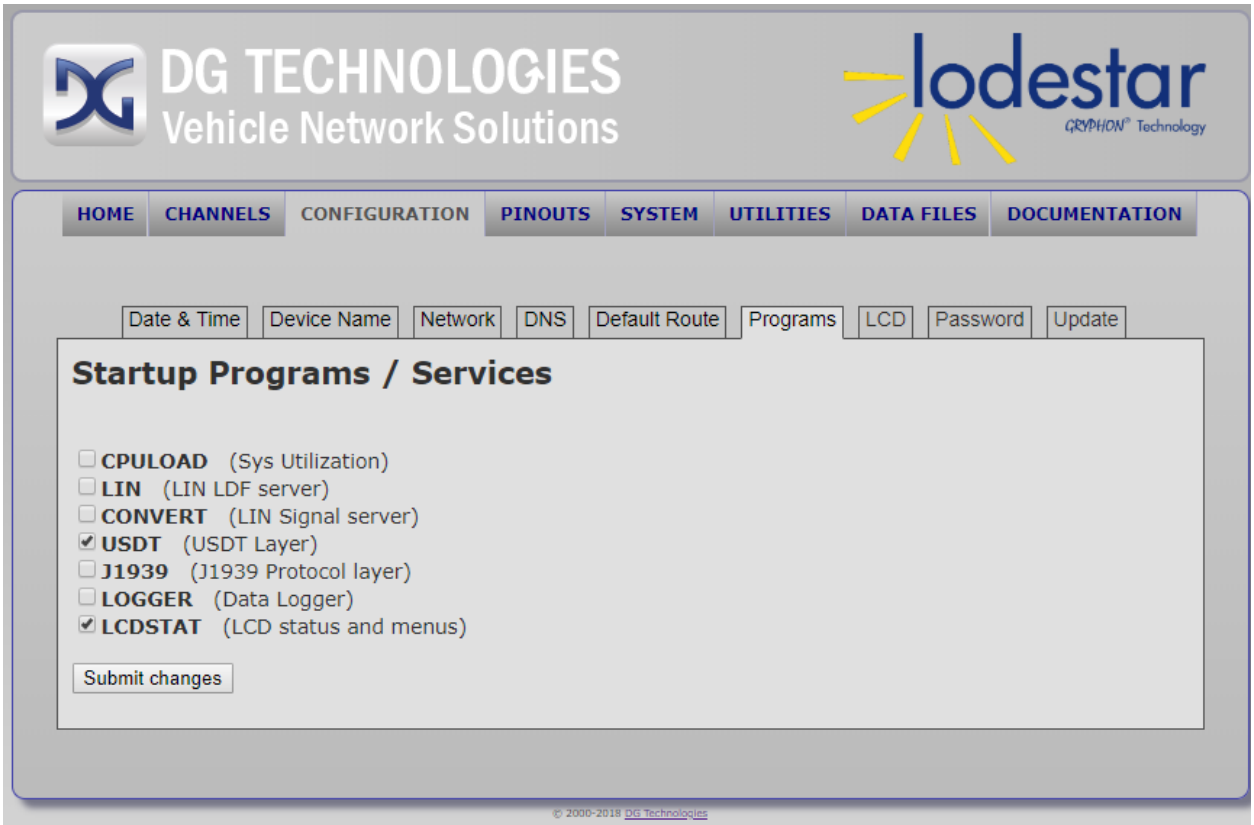
4.2.5 Default Route Configuration



- **Default Route Configuration –** You may set up a new default route address. Check the **Enable Default Route** box and fill in the default address. Click on **Submit Default Route Configuration Changes** to accept the new default configuration. A conformation of the change will be displayed.

  The **Reset** button will return the settings to the previous parameters.

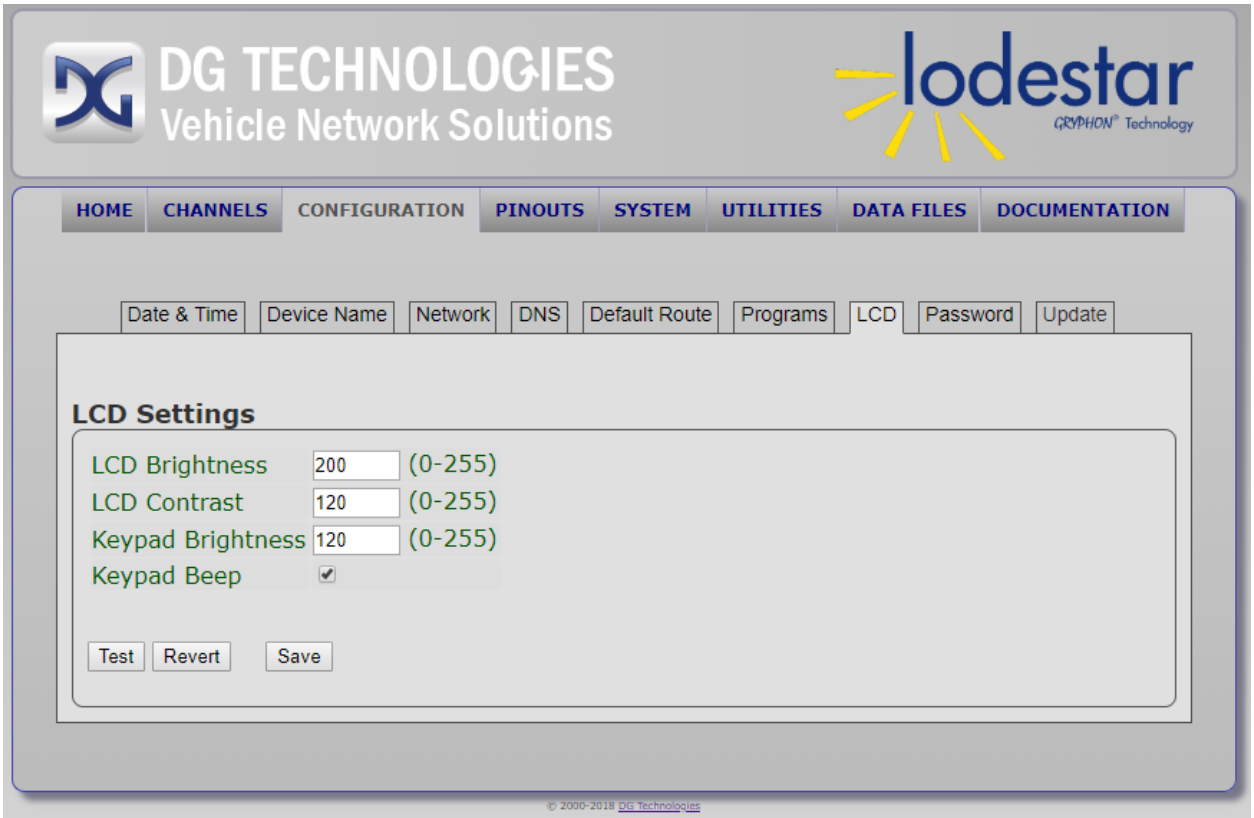
4.2.6 Programs Tab



- **Startup Programs / Services –** A checkmark indicates that a program is currently active on this hardware unit. Any changes are subject to the capabilities of current firmware.

If you want a program to run that is not currently enabled, then check the box, and reboot the Lodestar. The program will run after the Lodestar has been rebooted.

4.2.7 LCD Tab



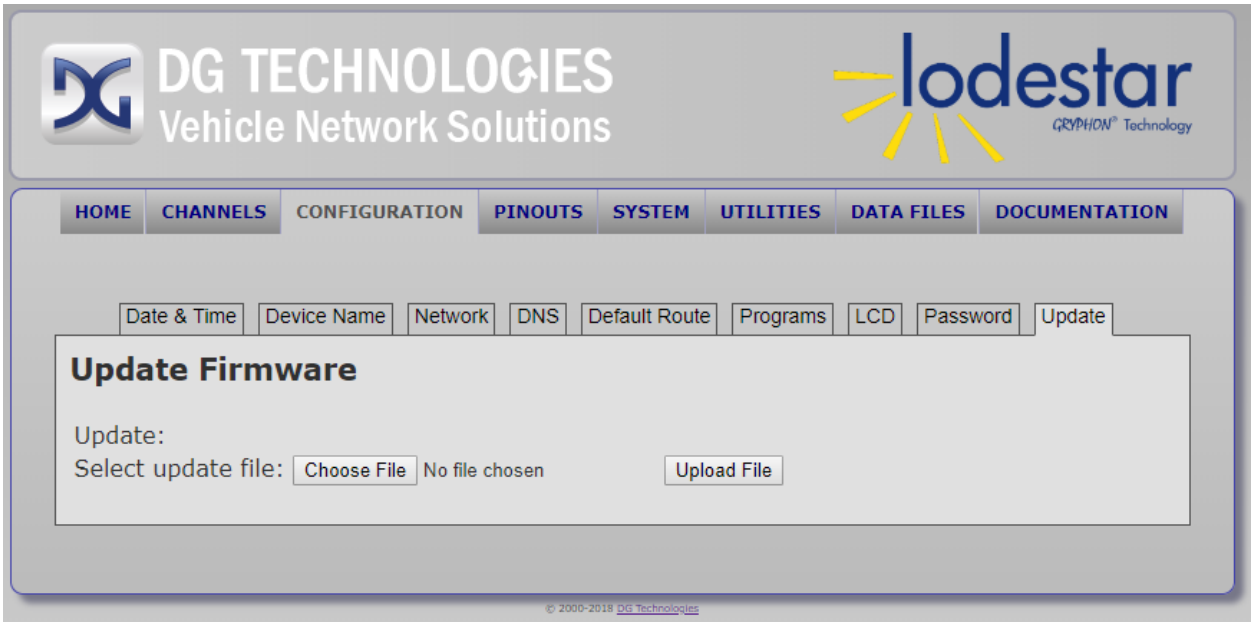
- **LCD Settings –** This page allows you to change contrast and brightness settings for the LCD. You can try different settings and save or revert the changes on this page. You can also change the backlight brightness of the front panel keypad and enable or disable the beeper in the front LCD panel.

4.2.8 Password Tab

- **Change Sysadmin Password** – You may enter a new sysadmin password and then click **Submit Password Change**.

Clicking on **Reset** will revert to the previous password.
Note: Please be advised that only the **sysadmin** password, **not the root password**, will change.

4.2.9 Update Tab



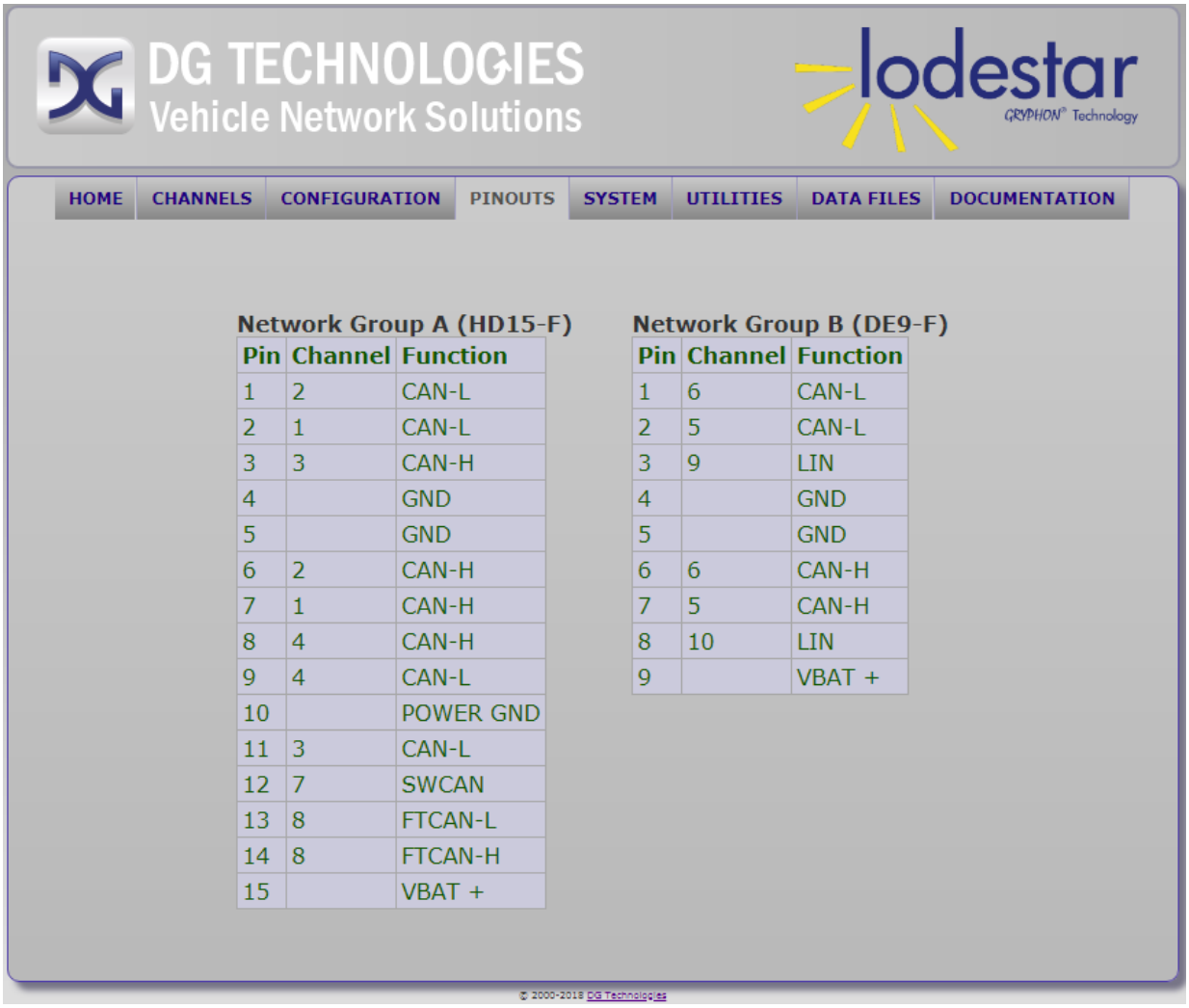
- **Update Firmware** – From time to time, a firmware change may be released as a patch rather than a complete firmware update. This may be used to add a new feature or program, for example.

In order to use the update feature, the new firmware patch will need to be downloaded to your host PC. Clicking on the **Choose File** button will allow you to browse on your host PC to find the update file.

An update file will have a filename in the form of DGA8_Update_yyyymmdd.tgz, for example DGA8_Update_20181115.tgz

Click on the update file and then click on the Upload File button to begin the update process. A progress message will appear on the host PC to tell you when the process is complete. It usually only takes a few seconds to do an update. After updating the firmware, a power cycle is required.

4.3 Pinouts Tab



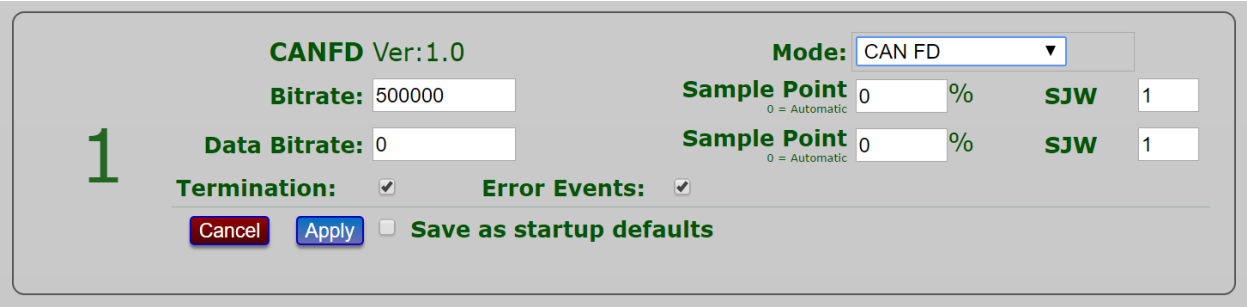
Under the Pinouts tab is a list of all protocol channels, with their associated pin outs and channel ID assignments.

4.4 Channels Tab

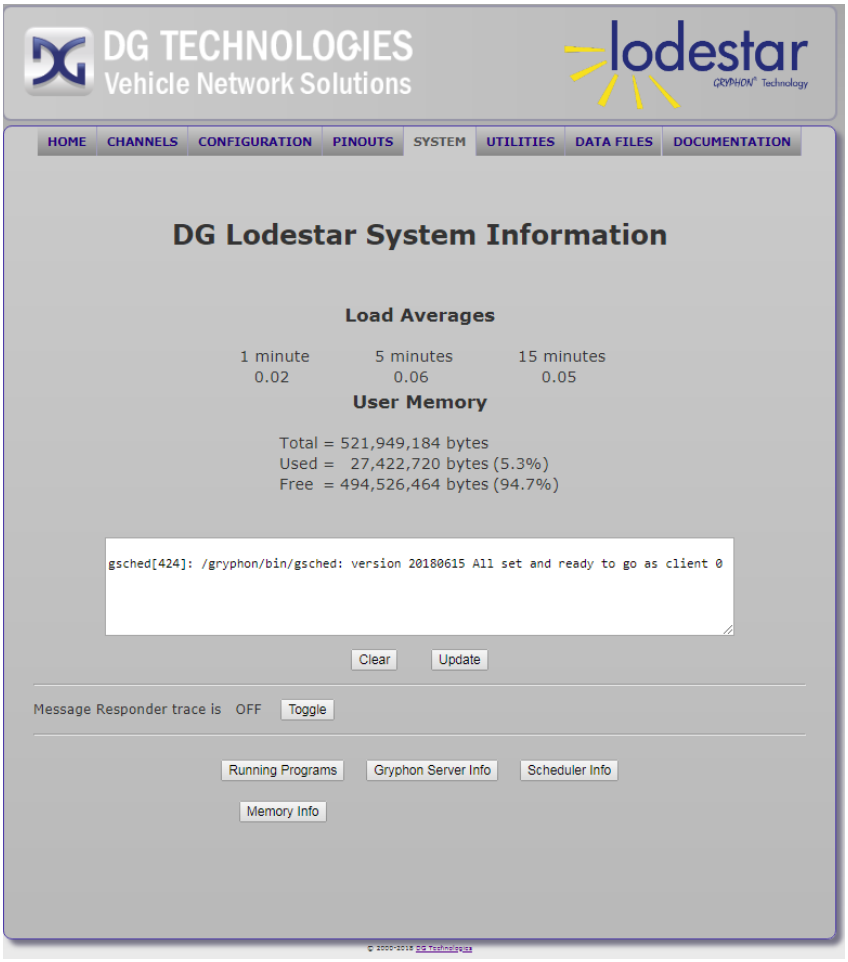
Under the Channels tab is a listing (by channel with version and serial number) of the protocol channels installed on the hardware. It also contains Channel Statistics and driver information.

On this page, you may configure the following channel settings (by clicking the **Configure** button for the channel you wish to modify):

- Mode (CAN, CAN FD, CAN/CAN FD Mixed)
- Bitrate
- Sample Point percentage
- SJW
- Termination ON or OFF
- Error reporting
- Save as startup defaults
- Bus speed (customized or one of several presets). For changes to become valid, check the **Apply** button on the Lodestar Channel Setup screen.

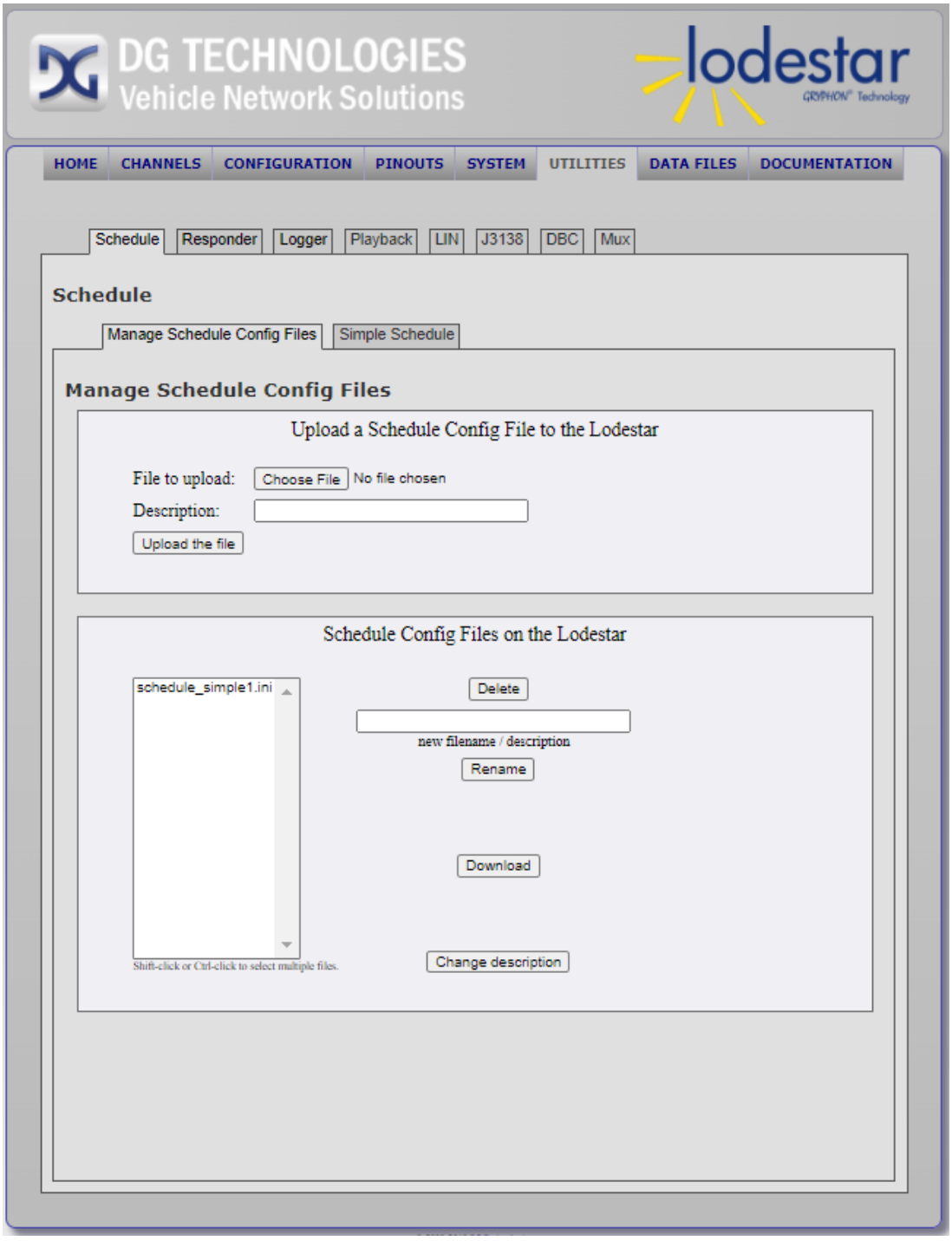


4.5 System Tab



This page provides information about the current state of the Lodestar CPU and the Linux Operating System.

4.6 Utilities Tab



This page provides links to a number of on-board utilities, including a utility to manage LIN Definition Files, utilities for use with the built-in data logger program, DBC file management and a programming multiplexor for interfacing to multiple ECUs in an End Of Line or programming environment.

4.7 Documentation Tab

This page provides technical information for the Lodestar.

In addition to DG supplied technical information, it is possible for the user to load their own technical documentation, such as PDF files or even flash video files for technical instruction. These user-loaded files will be shown when List Available Documents is selected. Video files are streamed to the connected PC and viewed in the web browser.

Appendix A

Lodestar 8 channel CAN FD Version - Overview

On a standard Lodestar, CAN channel 7 supports Single Wire CAN, and CAN channel 8 supports Fault Tolerant CAN.

As a factory ordered option, channels 7 and 8 may be configured to support High Speed CAN/CAN-FD the same as CAN channels 1 to 6.

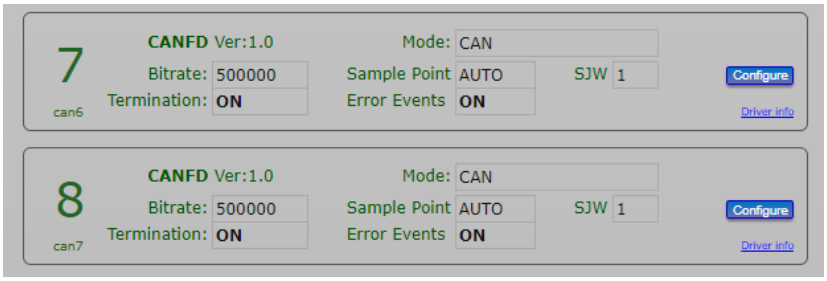
Identification

There will be a silver colored label on the top right-hand corner of the enclosure of the modified Lodestar. This is the only visual indication of a modified unit.

If you connect to the Lodestar internal web page, you will see the ZeroConf name of the Lodestar now indicates 8 CAN FD channels (Lodestar-8xFD), along with the serial number.

Example:

This Lodestar unit has been modified to change the transceivers supported on channels 7 and 8. Both channels now use high speed dual wire CAN transceivers to support both classic CAN and CAN FD. CAN channels 7 and 8 now operate the same as channels 1 through 6. Here is a screen shot of the default configuration settings for channels 7 and 8:



Single Wire CAN and Fault Tolerant CAN are not supported on this modified Beacon unit.