



N2KAnalyzer® V3

NMEA 2000® Network Analysis Software

User's Manual

Revision 3.2.0

Maretron Manual Part #: M001501

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1 Introduction

N2KAnalyzer software is a powerful PC-based tool for analyzing, troubleshooting, and upgrading NMEA 2000 networks. The N2KAnalyzer software, when installed on a Windows PC and used in conjunction with an intelligent NMEA 2000 gateway, such as the Maretron USB100 or IPG100, can be used to analyze the performance of NMEA 2000 networks, troubleshoot NMEA 2000 networks which are not functioning correctly, and update firmware on OctoPlex and Maretron NMEA 2000 devices. N2KAnalyzer can be used on an operating NMEA 2000 network whose state can be captured into a file and used for later analysis or can be used offline to analyze the saved network state, allowing a user to save state of a network and send it to a technical expert for analysis.

Features:

- List all NMEA 2000 devices on the network
- Display a wealth of following information for each device:
 - Node Address
 - Manufacturer
 - Manufacturer Model ID
 - Manufacturer Model
 - Manufacturer Serial Number
 - Source
 - Data Instance
 - Label
 - Current Software
 - Available Software
 - Boot Software Version
 - Installation Description
 - Manufacturer Information
 - NMEA 2000 Device Function
 - NMEA 2000 Device Class
 - Manufacturer Model (Hardware) Version
 - NMEA 2000 Industry Group
 - NMEA 2000 Unique Number
 - NMEA 2000 Device Instance
 - NMEA 2000 System Instance
 - NMEA 2000 Product Code
 - NMEA 2000 Database Version
 - NMEA 2000 Certification Level
 - NMEA 2000 Load Equivalency
 - Transmitted PGN List
 - Received PGN List
- For devices supporting multiple channels, display the following information for each device, as appropriate:
 - Hardware Channel
 - Indicator
 - Source
 - Instance

- Label
- Display NMEA 2000 messages transmitted by each device in an easy-to-understand, human-readable format
- Modify Installation Description information on devices which support user-programming of this information
- Modify source and instance information on devices which support user-programming of this information
- Analyze the devices on the network and their transmitted data to ensure that there are no instancing conflicts which can cause “bouncing needles” on displays
- Program label information on devices which support user-programming of this information to assign meaningful text strings to every device and channel
- Configure/Calibrate Maretron devices and select devices from other manufacturers
- Update firmware on supported Maretron NMEA 2000 devices
- Update N2KAnalyzer and its available firmware images over the Internet

2 System Requirements

- PC running Microsoft Windows 7, Windows 8, Windows 10 or Windows 11
- N2KAnalyzer requires the use of a Maretron IPG100 or USB100 gateway. NMEA 2000® gateways from other manufacturers are not compatible with N2KAnalyzer .
- 1 GB RAM
- 30 MB Hard Disk Space
- Internet connection

3 Installation

N2KAnalyzer may be obtained by downloading from the Maretron website at

<http://www.maretron.com/downloads>

The installer for N2KAnalyzer is packaged as an executable file. To install N2KAnalyzer, download the N2KAnalyzer installer from the internet at the link given above and save the executable file to your hard drive. Then, run the N2KAnalyzer installer as you would any other program.

The N2KAnalyzer Installer will display the following screen:

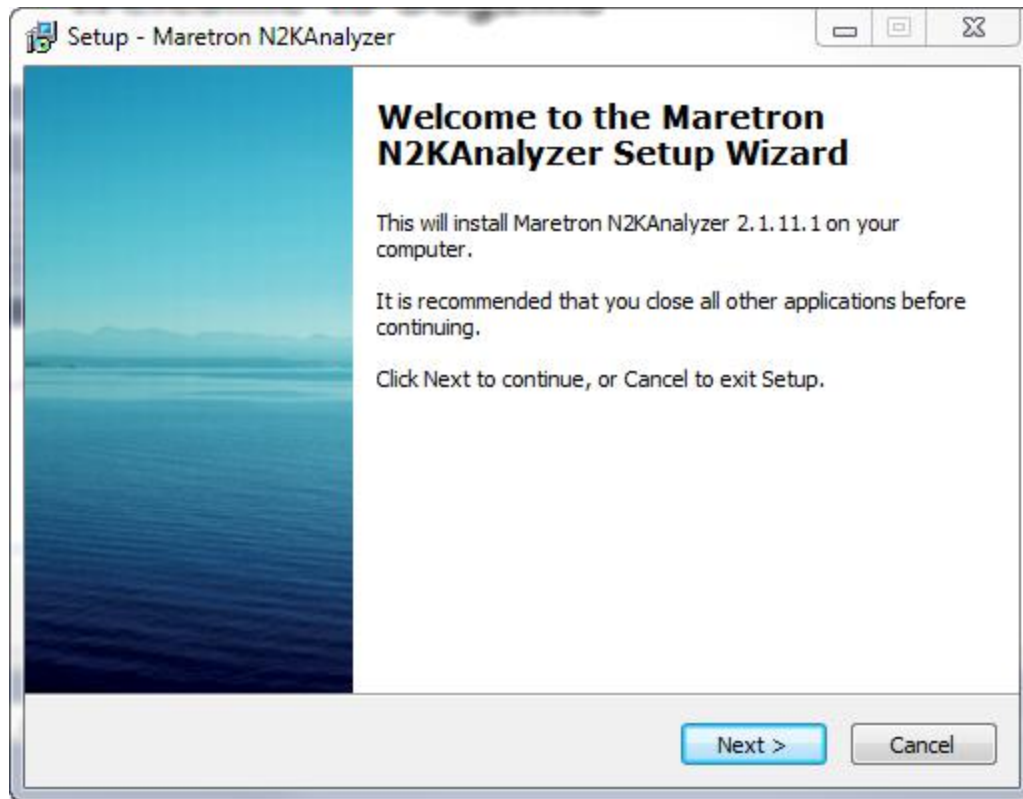


Figure 1 – N2KAnalyzer Installation Introduction Screen

Click the *Next* button to continue. The N2KAnalyzer installation program will then display the *Select Destination Location* screen.

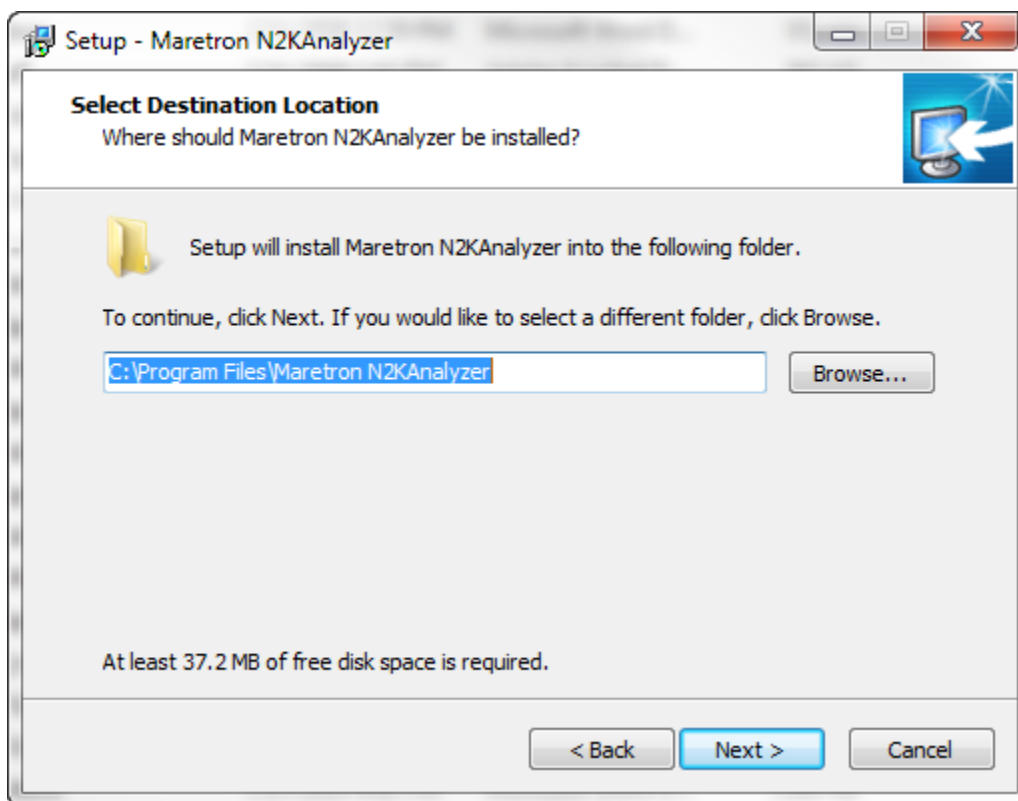


Figure 2 – Select Destination Location Screen

By browsing or by typing in the name directly, enter the name of the directory in which you wish the software to be installed, then click the *Next* button to continue to the next screen.

The N2KAnalyzer installer software will then display the *Select Start Menu Folder* screen.

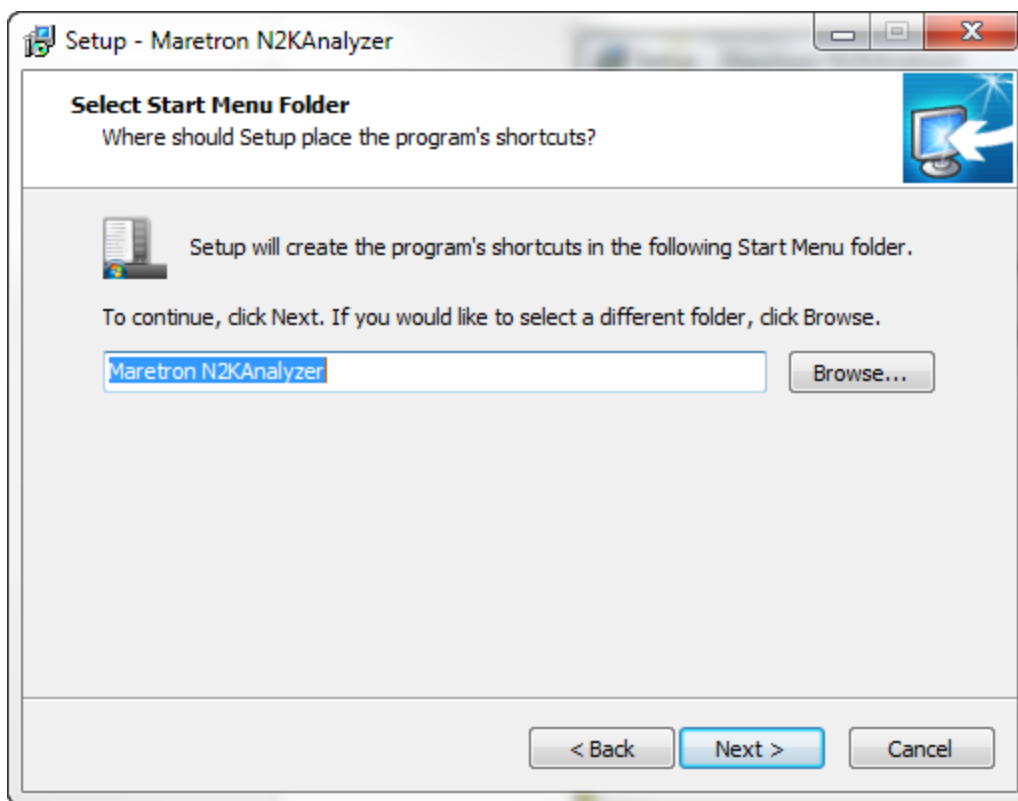


Figure 3 – Select Start Menu Folder Screen

This screen gives you the opportunity to change the default start menu folder into which N2KAnalyzer's shortcuts will be placed. Once you are satisfied with the name of the start menu folder, click the *Next* button to continue. The N2KAnalyzer installation program will then display the *Select Additional Tasks* screen.

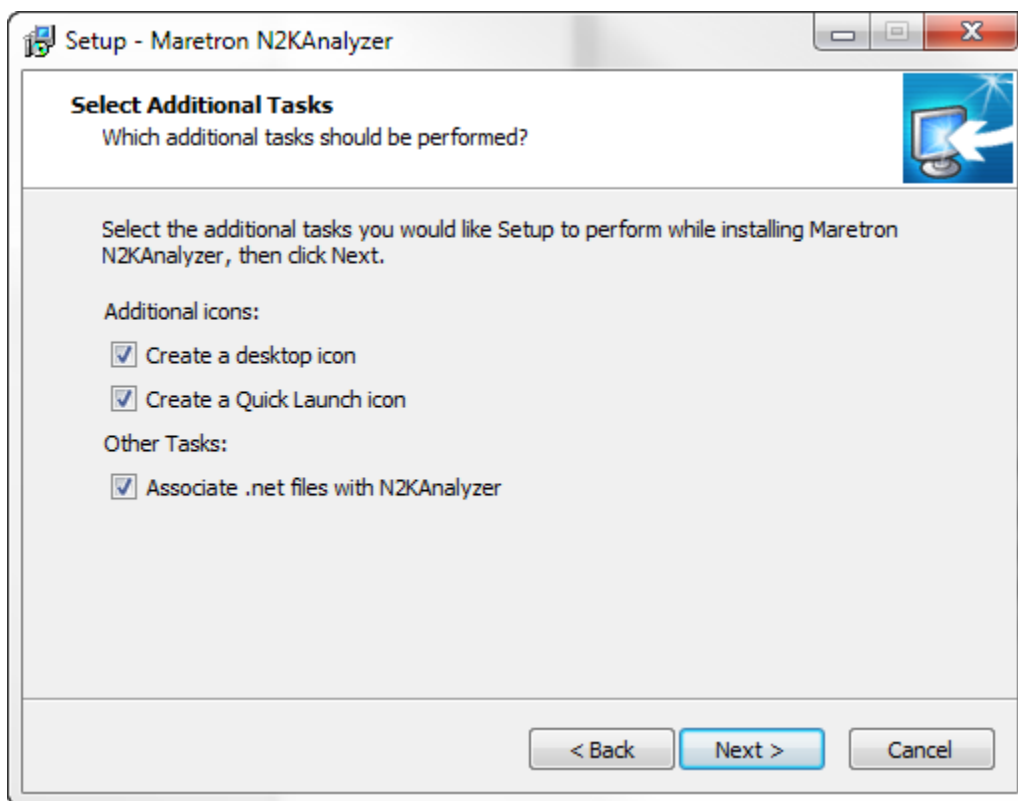


Figure 4 – Select Additional Tasks Screen

This screen will allow you to choose optional tasks for the N2KAnalyzer installation program to perform while it is installing the software. You may optionally select the creation of a desktop icon or a quick launch icon to start the N2KAnalyzer software in addition to the standard start menu launch item. Also, you may choose to associate files with the “.net” extension with N2KAnalyzer so that you may open the files in N2KAnalyzer by clicking on them in Windows. Once you have made your selections by clicking on the appropriate checkboxes, click the *Next* button to continue to the next screen.

The N2KAnalyzer installation software will then display the *Ready to Install* screen.

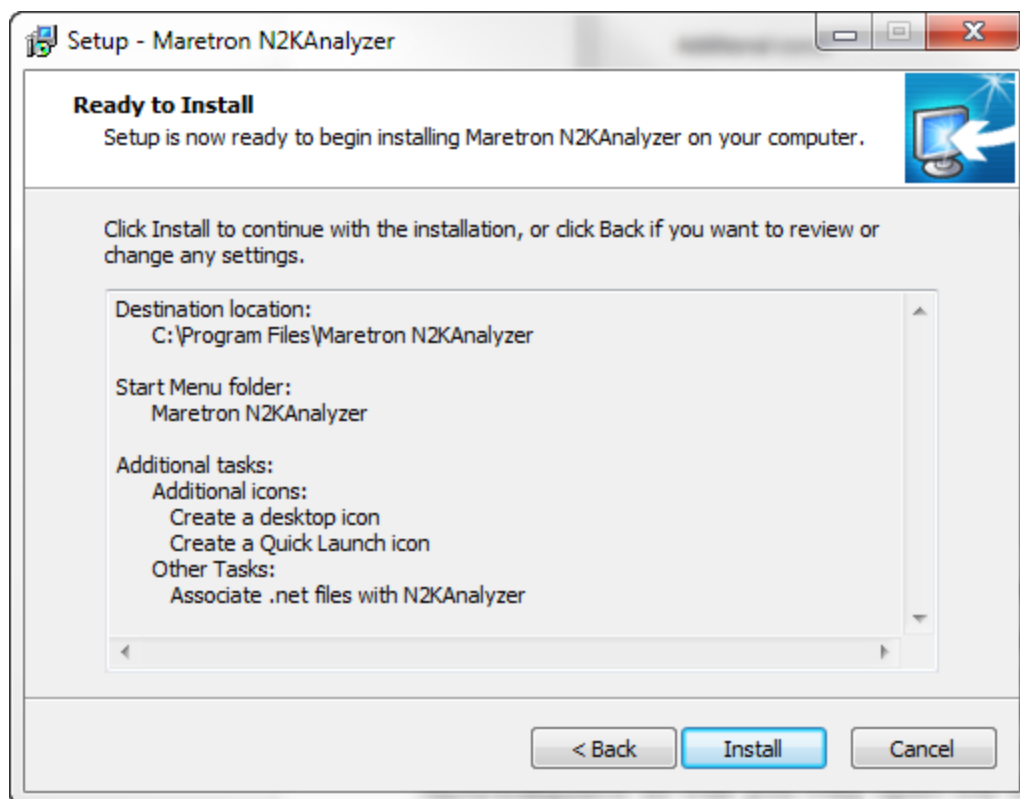


Figure 5 – Ready to Install Screen

This screen displays a summary of the options you have chosen up to this point in the installation process. If you wish to change any options at this time, click the *Back* button which will take you back to previous screens in the installation process, where you may make the desired changes. Once you are satisfied with the installation options you have chosen, click the *Install* button to begin copying the program files to the final locations.

The N2KAnalyzer installation software will display the *Installing* screen to show the status of the installation.

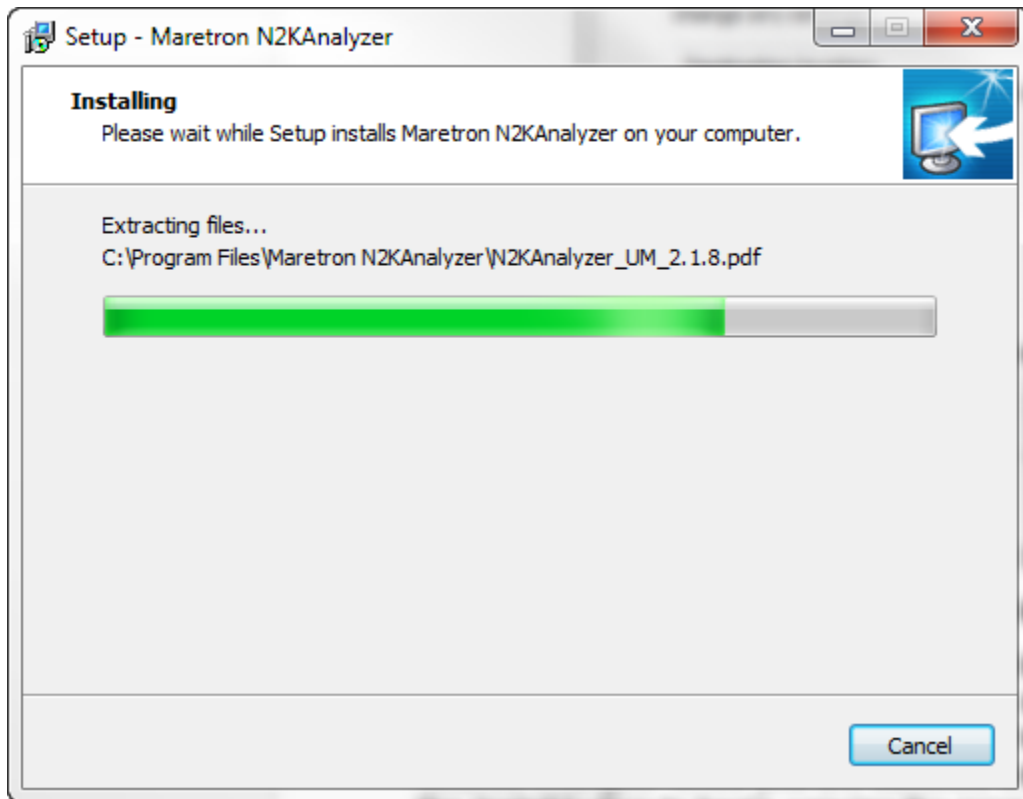


Figure 6 – Installing Screen

Once the installation of the software is finished, the N2KAnalyzer installation program will display the *Completing the N2KAnalyzer Setup Wizard* screen.

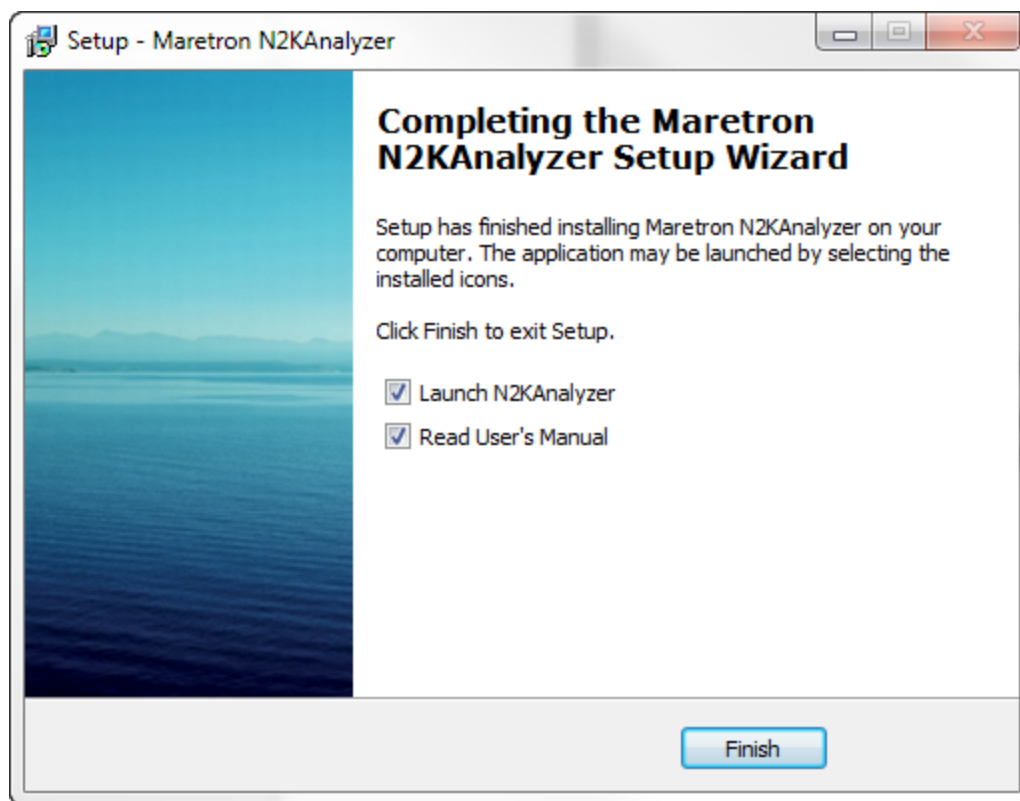


Figure 7 – Completing the N2KAnalyzer Setup Wizard Screen

This screen gives you the option to launch the N2KAnalyzer software. Click the *Launch N2KAnalyzer* checkbox if you wish to start the N2KAnalyzer software after the installation process is complete.

This screen also gives you the option to read the *N2KAnalyzer User's Manual*. Click the *Read User's Manual* checkbox if you wish to open the *N2KAnalyzer User's Manual* after the software installation process is complete.

Finally, click the *Finish* button to complete the software installation process. The N2KAnalyzer software is now ready to use.

4 Tutorial

4.1 Starting the software

You may start the N2KAnalyzer software in one of four ways:

- Selecting the *All Programs→Maretron N2KAnalyzer* menu item from the Start Menu.
- Clicking the quick launch icon, if you requested one to be created during installation,
- Clicking the desktop icon, if you requested one to be created during installation, or
- Double-clicking on a saved boat (.NET) file.

4.2 Connecting to a NMEA 2000 Network



WARNING

N2KAnalyzer requires the use of a Maretron IPG100 or USB100 gateway. NMEA 2000 gateways from other manufacturers are not compatible with N2KAnalyzer.

When you start the N2KAnalyzer software, the software will look for a NMEA 2000 gateway. If it finds a single gateway, or if the gateway you used previously is available, the N2KAnalyzer® software will ask you if you wish to connect to the NMEA 2000 network using that gateway.

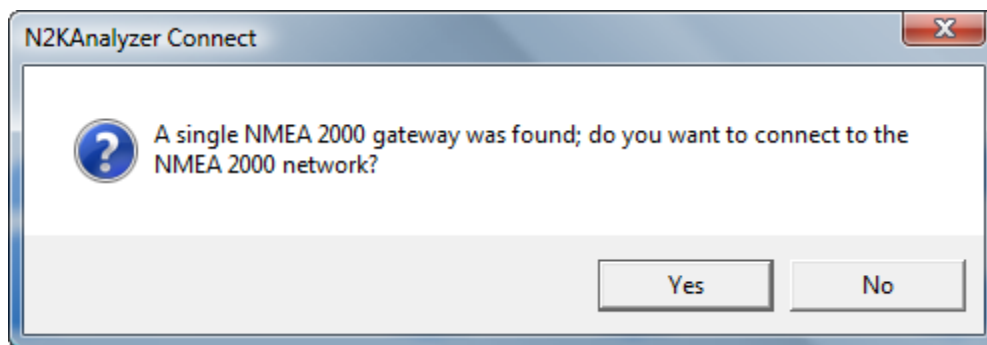


Figure 8 – N2KAnalyzer Connect Screen

If no connected gateways are detected on the computer, you are given the option to connect a gateway and retry the gateway detection process by clicking the *OK* button, or you may continue the program without going online (for example, to examine a previously saved boat file) by clicking the *Cancel* button.

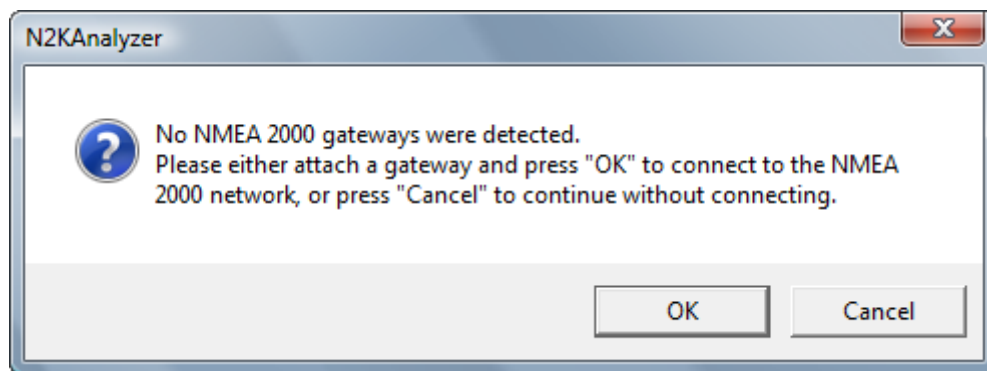


Figure 9 – Screen Displayed When No Gateways are Detected

If you choose to connect a gateway, then after you connect the gateway and press the *OK* button, you are presented with the *Configure Gateway* dialog box to confirm your gateway selection.

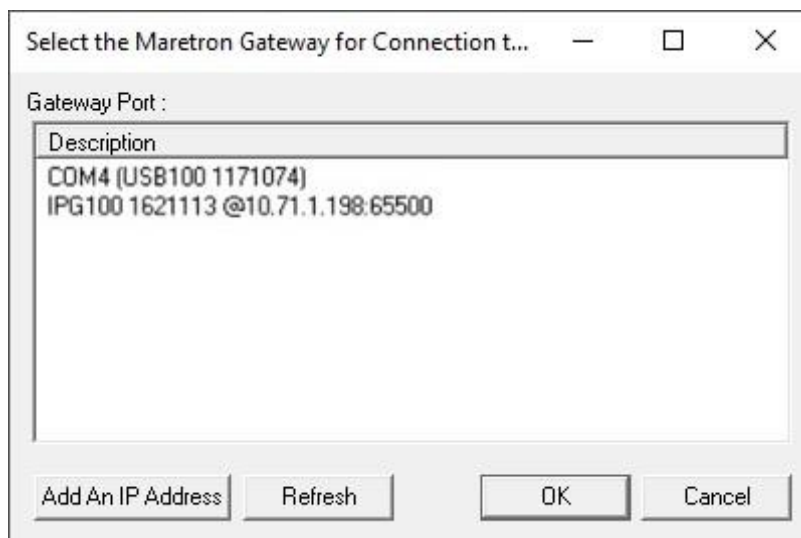


Figure 10 – Gateway Configuration Screen

Click on the desired gateway to select it, and then click on the *OK* button to confirm your selection and enter online mode.

4.3 Viewing Device Information

Once the N2KAnalyzer software has connected to the N2K network, or if the N2KAnalyzer software is operating disconnected from the N2K network with a loaded boat file, then the device list window is filled with information about the NMEA 2000 devices on the bus.

File Setup Analyze Update Configure Web Help													
													
Expand	Node Address	Manufacturer	Mfg Model ID	Mfg Model Version	Mfg Serial Number	Source	Device Instance	Data Instance	Label	Current Software	Available Software	Installation Description #1	Installation Description #2
	B3	Maretron	DCM100	2.0	1402401		2	3	Stbd Start	1.0.5.2	-	Stbd Start	
	C0	Maretron	ACM100	1.0	1381751		0	0	ACM100 #1	1.1.1.2	-	EXTERNAL POWE...	MARETRON
	C2	Maretron	RAA100	1.0	1280068		0	0	Rudder	1.4.9	-		MARETRON
	D1	Maretron	SIM100	1.0	1420889		2	5	SIM100	1.2.2.2	-		MARETRON
	Channel		Label										
	1	Door Sensor											
	2	Bilge H/W											
3	Motion												
4	Smoke/Heat Detector												
5	CO Detector												
6	OFFLINE												
	D2	Maretron	RIM100	1.0	1440089		1	10	RIM100	1.2.2.2	-		MARETRON
	E7	Maretron	ALM100	1.0	1461783		0	0	LAB	1.0.6	-		MARETRON
	52	Maretron	IPG100	1.0	1621171		1	1	Network Gateway	4.1.8.2	-	10.71.1.119	MARETRON
	47	Maretron		D235-S1-TS-A-02/06	100982		1	1		3.005,3.0...	-		
	28	Maretron	VDR100	1.0	1760760		0	0	Data Recorder	3.0.6.1	-	10.71.1.138	MARETRON

Figure 11 – Main Program Window

4.4 Boat Files

N2KAnalyzer has the capability to store the state of a network and all its devices to an external file, and to load the state of a network and all its devices from an external file. These

files are called “boat files” and are usually named with the name of the vessel followed by a “.net” extension. If you are on a vessel with some NMEA 2000-related issue, you can start N2KAnalyzer and save a boat file, which you can then e-mail or otherwise transfer to someone at a remote location for analysis.

4.4.1 Loading a Boat File

While working disconnected from the NMEA 2000 bus, you may load a boat file that was saved previously and examine its contents using the N2KAnalyzer software. Selecting the *File→Open...* menu option or clicking on the *Open File* toolbar button will cause the following dialog screen to be displayed.

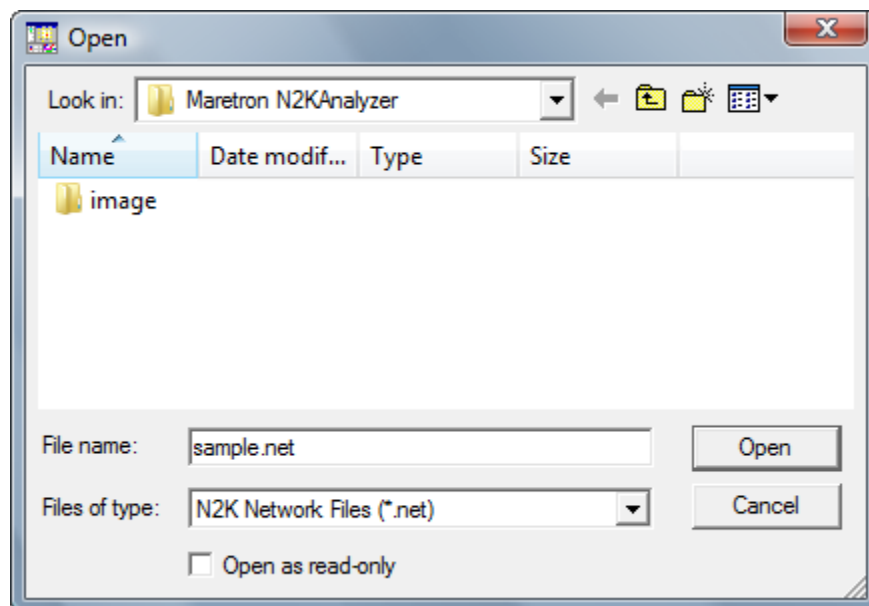


Figure 11 – Boat File Open Dialog Box

Browse to the boat file you wish to load or type in the name of a boat file you wish to load and then click the *Open* button to cause the boat file to be loaded.

4.4.2 Saving a Boat File

While connected to a NMEA 2000 bus, you may wish to save information about the network so that you or someone else can analyze it later using the N2KAnalyzer software. Selecting the *File→Save As...* menu item will cause the *File Save* dialog box to be displayed and will cause all currently available network information to be saved to a boat file.

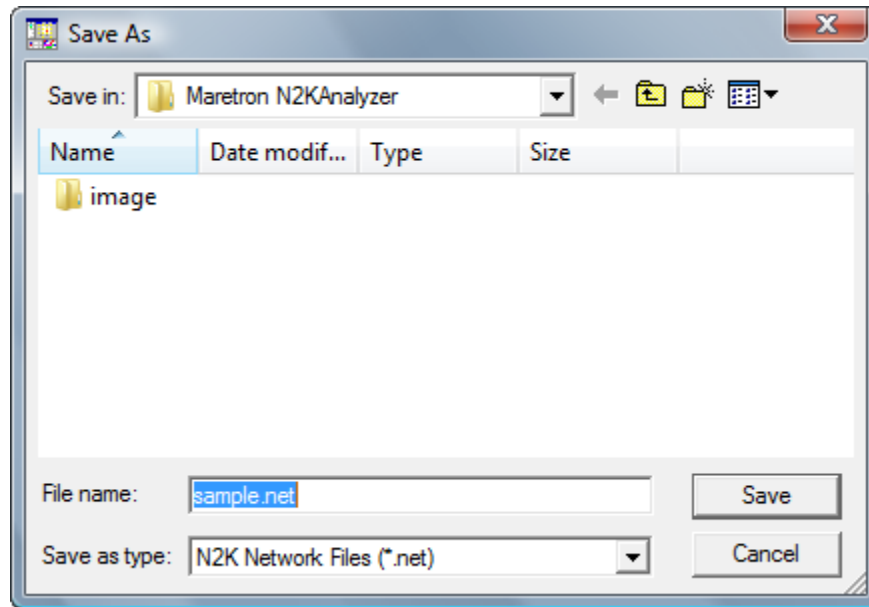


Figure 12 – Boat File Save Dialog Box

Browse to the directory in which you wish to save the boat file, and then type the desired filename under which to save the boat file. Finally, click the Save button to save the file to the hard drive.

If you are saving device configuration information in the boat file, it may take several minutes to write the boat file, as N2KAnalyzer will read device configuration information from every configurable device on the network.

4.5 Updating Software on a Device

If the N2KAnalyzer software has a version of software for a device that is newer than the version currently on the device, then the version number in the *Current Software* column of the device list window will be highlighted in red. You can update the software on the device to the latest available version in one of two ways:

Select the device in the device list window by clicking on it, and then select the *Update→Selected Device's Software...* menu item, or

Select the device in the device list window by clicking on it, and then right-click on the device and select the *Update Selected Device's Software* menu item from the pop-up context menu that appears.

Once the update process starts, the N2KAnalyzer software will display a window describing the status of the device software update process.

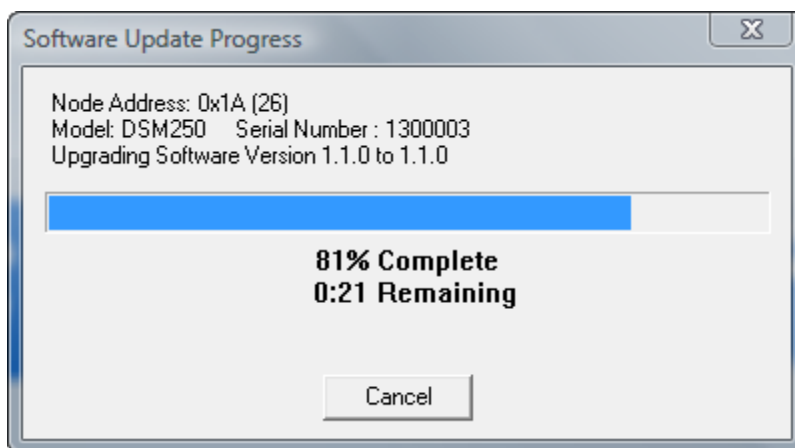


Figure 13 – Firmware Update Progress Window

Once the firmware update process has completed, the N2KAnalyzer software will then display another window summarizing the results of the firmware update process.

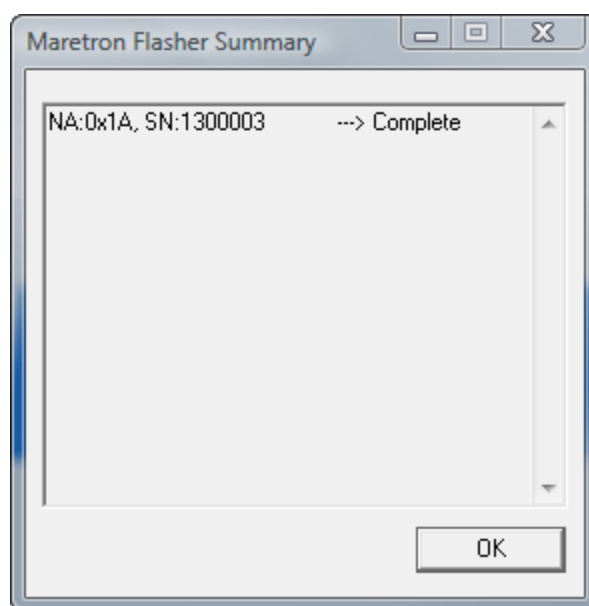


Figure 14 – Firmware Update Summary Window

4.6 Viewing Device Properties

To view more information about a device than is displayed in the device list window, select the device in the device list window and then either select the *Analyze→Device Properties* menu item or right-click on the highlighted device and select *Device Properties* from the pop-up context menu that appears as a result.

The Device Properties window has three tabs: General, Transmit PGN List, and Received PGN List. The General tab is shown in the figure below.

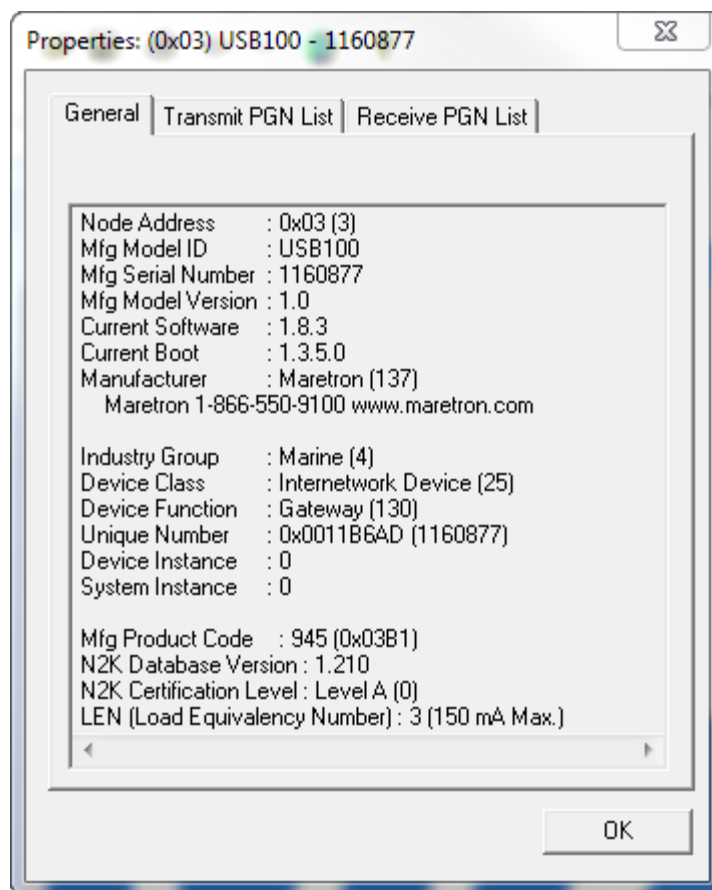


Figure 15 – Device Properties Window: General Tab

The General tab displays the following information:

- **Node Address** – Each device on an NMEA 2000 network claims a node address between the value of 0 (0x0 hexadecimal) and 251 (0xFB hexadecimal). These node addresses may change as new devices are added to the network. This column shows the node addresses claimed by the device.
- **Mfg Model ID** – This shows the Device Model (sometimes known as Model ID, Model Number, or Model Name) reported by the device.
- **Mfg Serial Number** – This shows the serial number reported by the device.
- **Mfg Model Version** – This shows the hardware version number reported by the device.
- **Current Software** – This shows the firmware version number reported by the device.
- **Current Boot** – This shows the boot loader version number reported by the device (for Maretron devices only)
- **Manufacturer** – This column shows the manufacturer reported by each device. The manufacturer's names are read from a table in the N2KAnalyzer software which translates the manufacturer's code reported by the device. If a new NMEA 2000

manufacturer has been added since the N2KAnalyzer software was release, this will show up as a numeric value. If this happens, please either

- Update your N2KAnalyzer software, or
- Check the NMEA website for the current list of manufacturer codes.
- **Industry Group** – This shows the industry group reported by the device. Maretron products are in the Marine industry group. Device Class and Device Function definitions depend on the value on this field.
- **Device Class** – This shows the NMEA 2000 device class as reported by the device.
- **Device Function** – This shows the NMEA 2000 device function (this is a more-specific indication of the device function within the context of the device class) reported by the device.
- **Unique Number** – This shows a number for the specific device. The combination of this number, the Device Class, and the Device Function are guaranteed to be unique.
- **Device Instance** – This shows the electronic control instance number. This is used by some receiving devices to distinguish one set of data from another.
- **System Instance** – This shows the system instance number. This is used by some receiving devices to distinguish one group of devices of data from another.
- **Mfg Product Code** – This shows the NMEA 2000 product code for the device. This number uniquely identifies the manufacturer and model of the device.
- **N2K Database Version** – This shows the version of the NMEA 2000 database that is supported by this device.
- **N2K Certification Level** – This shows the certification level of this device. Current certification levels are “A” and “B”. Recently, certification levels have been eliminated from the standard, so this field will be blank for newer devices.
- **LEN (Load Equivalency Number)** – This shows the number of loads that this device presents to the network. This can be used for power supply and cable sizing. Each load represents 50 mA of current consumption.

The Transmit PGN List shows a list of the messages that this device can transmit. This function is required for devices with Certification Level “A” or newer devices with no certification level. Devices with Certification Level “B” may not provide this information.

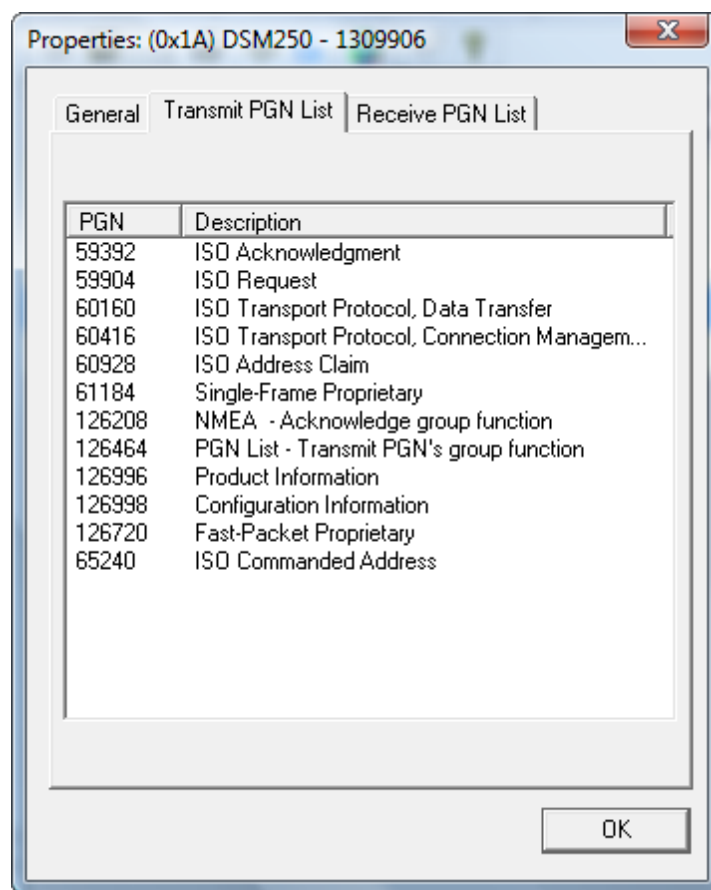


Figure 16 – Device Properties Window: Transmit PGN List Tab

The Receive PGN List shows a list of the messages that this device is capable of recognizing. This does not indicate the message that the device is receiving at the current time. This function is required for devices with Certification Level “A” or newer devices with no certification level. Devices with Certification Level “B” may not provide this information.

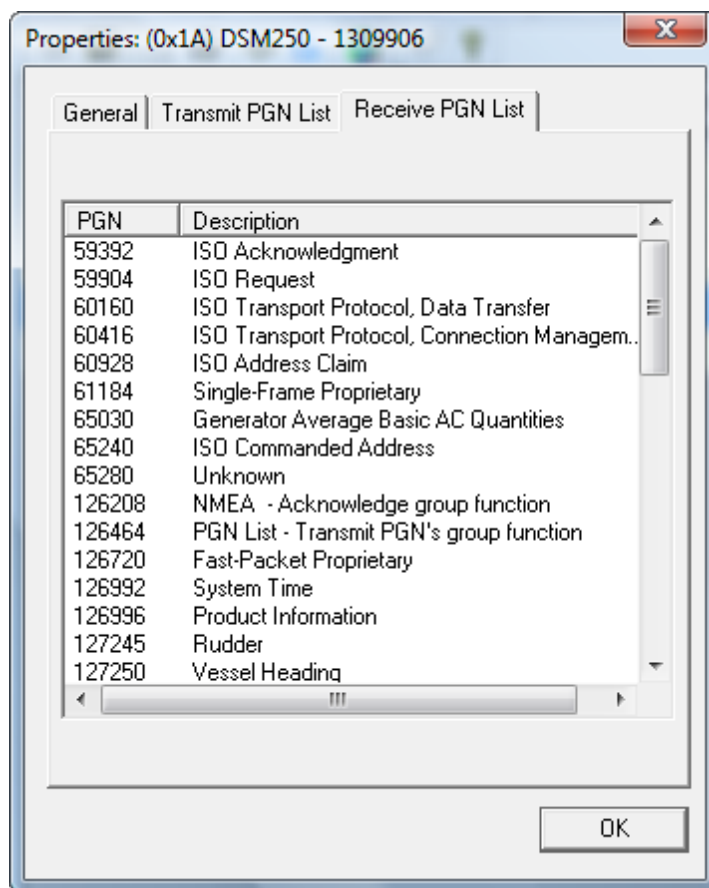


Figure 17 – Device Properties Window: Received PGN List Tab

5 Configuring Devices

N2KAnalyzer allows you to configure information common to all devices directly in the device list, much as you would edit a spreadsheet. Items in the device list which you can change have a white background.

For more detailed configuration of most devices, you may configure devices using the configuration dialogs that are built into N2KAnalyzer. To do this, select the device in the device list so that it becomes highlighted, then select the *Configure* → *Configure Device* menu entry. Alternatively, you may select the device in the device list, then right click on the device, and select *Configure Device* from the popup menu that appears.

5.1 Common Controls

5.1.1 Device Configuration Files

You can save the configuration of a device to a file on your hard drive. You can later load this configuration into another device of the same type. This is convenient for loading configuration of tank monitors (TLA100, TLM100, TLM150, or TLM200, or FPM100 in tank mode) when you have multiple tanks that have the same profile. You can also use this if you are building a

series of similar boats which have common configurations. You can save the configurations of the devices on the first boat being built, and then load these configurations directly into the corresponding devices on new boats, cutting the time it takes to configure these devices and reducing the chance of making configuration errors.

Device Configuration Dialog Conventions

When you first open a device configuration dialog, it contains the current configuration of the device (if online) or the configuration of the device as it was saved in a device configuration file or boat file (if offline). Any fields in the device configuration dialog that differ from the configuration currently stored in the device itself are in **RED** text.

5.1.2 Common Configuration Screen Buttons

The following buttons appear at the bottom of every device configuration screen,

Load Config From File...

You can load the configuration dialogs with a stored device configuration by clicking this button. After you click this button, a file selection window opens, allowing you to choose a device configuration file. When you click *OK*, the configuration stored in the device configuration file will be loaded into the device configuration window. You must click *Put Config to Device* to store the configuration to the device itself.

Save Config To File...

When you click this button, N2KAnalyzer will store the configuration information currently in the device configuration window to a file. After this button is clicked, a file selection dialog will open, allowing you to choose a file name in which to save the configuration window contents. NOTE: if you want to be sure to store the device configuration to a file, make sure you haven't changed any configuration items between opening the configuration window (or clicking on *Get Config From Device*) and clicking *Save Config To File...*.

Get Config From Device

When you click this button, N2KAnalyzer gets the device configuration information from the device and refreshes the configuration window to match the device configuration.

Put Config To Device

When you click this button, the device configuration information currently appearing in the device configuration window is stored into the device, where it will be retained over power-up cycles.

Restore Factory Defaults

When you click this button, the device will be restored to the same state it was in when it was shipped from the factory. All configuration information and user calibration information are restored to the factory default state with the exception that the device will retain its current node address.

Close

When you click this button, the device configuration window will be closed. If you have made any changes to the data in the device configuration window and haven't put those changes to the device, a warning window will appear to make you aware of this.

5.2 ACM100

5.2.1 General Tab

This tab contains commonly-used configuration items.

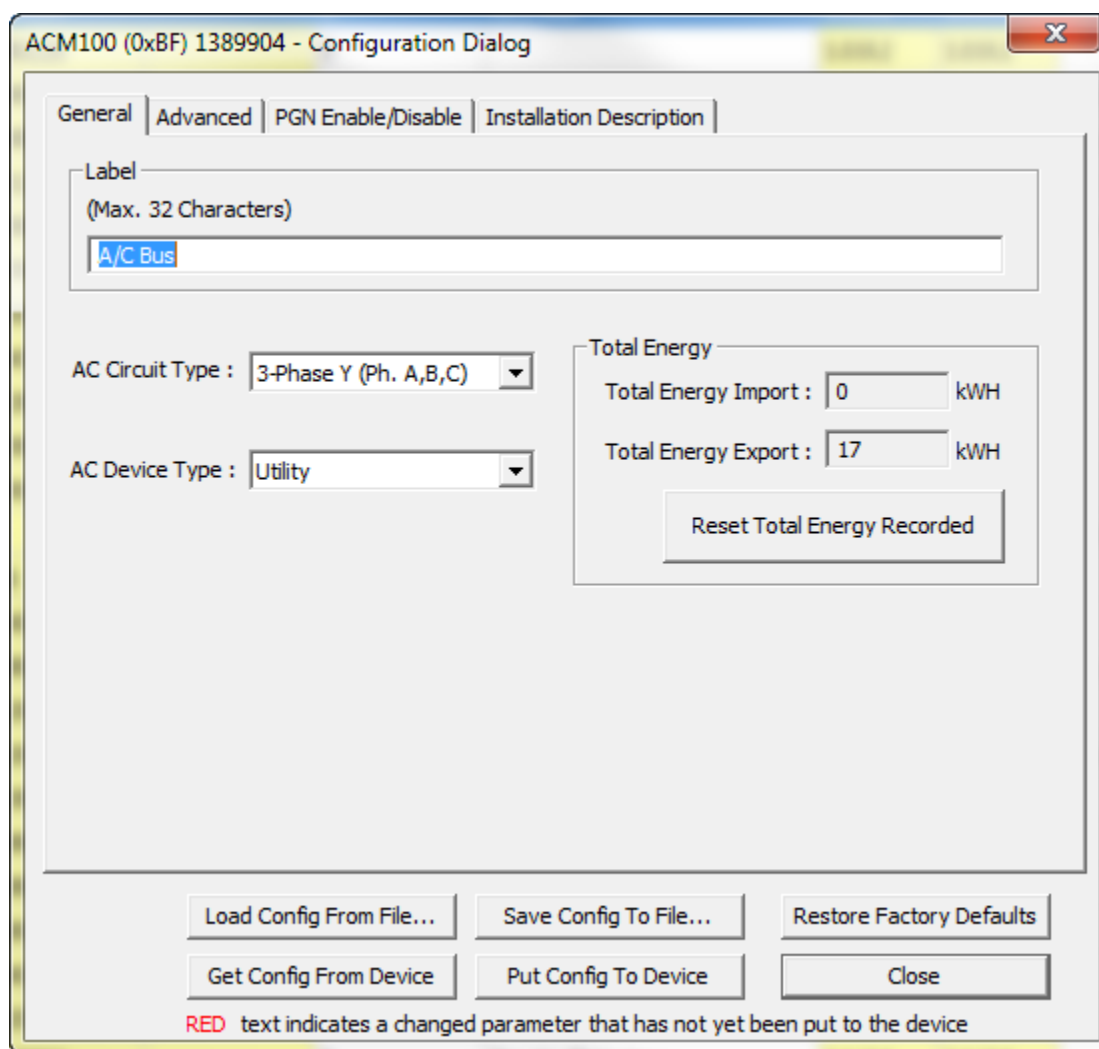


Figure 18 – ACM100 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

AC Circuit Type

You must configure the ACM100 as to what type of AC circuit connection it is monitoring. The allowable values for this parameter are as follows:

- Single-Phase (Ph. A) – use this value when power is connected via a single hot wire and a single neutral wire (a typical 110VAC connection in the US).
- Single-Phase (Ph. A, B) – use this value when power is connected via the two hot wires and single neutral wire from a single phase of a transformer (a typical 220VAC connection in the US).
- Three-Phase (Ph. A, B, C) – use this value when power is connected via the three hot wires and single neutral wire from a three-phase “Wye” connected circuit.

AC Device Type

You must configure the ACM100 as to what type of AC source it is monitoring. The allowable values for this parameter are as follows:

- “Generator” (default) – use this value when you are monitoring the output of a genset.
- “Utility” – use this value when you are monitoring shore power.
- “Bus” – use this value if you are monitoring power flowing across a cable that is not located directly at the output of a genset or a shore power connection (e.g., an AC selection switch might have as an input the shore power and another input from the genset, connecting the ACM100 at the output of the AC selection switch would require the ACM100 to be configured as “Bus”).

Reset Total Energy Recorded

The ACM100 accumulates the total energy imported from a utility or exported from a generator. Select this option to zero the total energy accumulated readings in the ACM100.

Total Energy Import

This field shows the total energy imported from the utility since the totals were last reset.

Total Energy Export

This field shows the total energy exported from the generator since the totals were last reset.

5.2.2 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

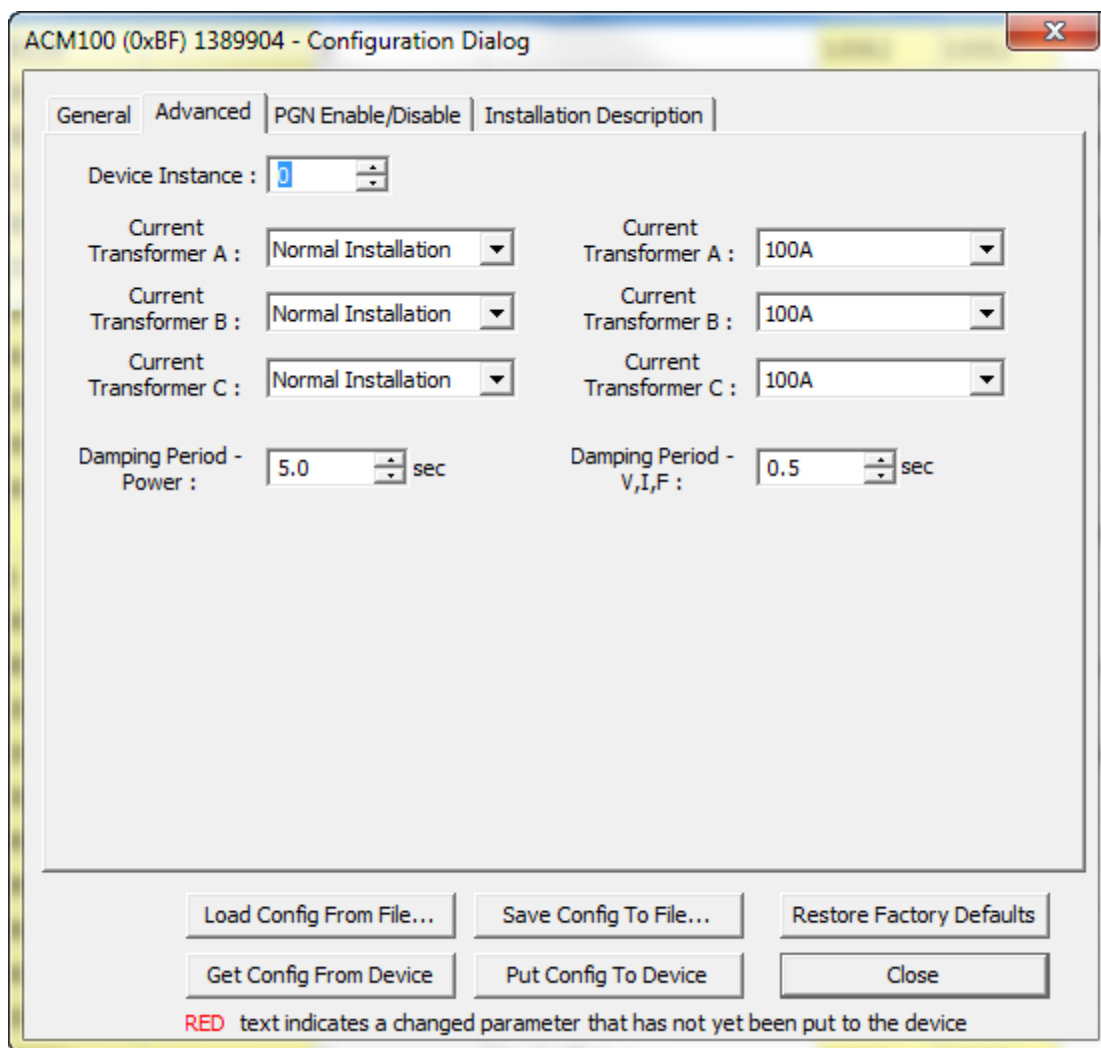


Figure 19 – ACM100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

Current Transformer A

Installation: If you install the current transformer backwards from the recommended orientation, you can adjust for it by changing the value of this field from “Normal Install” to “Reverse Install”

Range: The ACM100 is usually used with 100A current sensors. If you are using an optional 400A current sensor, change the value of this field from the default value of “100A” to “400A”.

Current Transformer B

Installation: If you install the current transformer backwards from the recommended orientation, you can adjust for it by changing the value of this field from “Normal Install” to “Reverse Install”

Range: The ACM100 is usually used with 100A current sensors. If you are using an optional 400A current sensor, change the value of this field from the default value of “100A” to “400A”.

Current Transformer C

Installation: If you install the current transformer backwards from the recommended orientation, you can adjust for it by changing the value of this field from “Normal Install” to “Reverse Install”

Range: The ACM100 is usually used with 100A current sensors. If you are using an optional 400A current sensor, change the value of this field from the default value of “100A” to “400A”.

Damping Period – Power

If you feel that the monitored Power parameters are changing too quickly or too slowly on the display, you can adjust the damping that is applied to the output readings by adjusting this parameter. The default damping period is 5 seconds. You may change it to a value in the range of 0.2 seconds to 10 seconds.

Damping Period – V,I,F

If you feel that the monitored Voltage, Current, and Frequency parameters are changing too quickly or too slowly on the display, you can adjust the damping that is applied to the output readings by adjusting this parameter. The default damping period is 0.5 seconds. You may change it to a value in the range of 0.2 seconds to 10 seconds.

5.2.3 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may configure the time interval between transmissions of a specific message for devices which support the configuring of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read “On”, if the device is currently transmitting the message, or “Off”, if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) “Disable” – this will turn off the periodic transmission of this message
- 2) “Default” – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

Please note that for the ACM100, the contents of the PGN Enable/Disable tab will depend on the “AC Device Type” selected in the General tab.

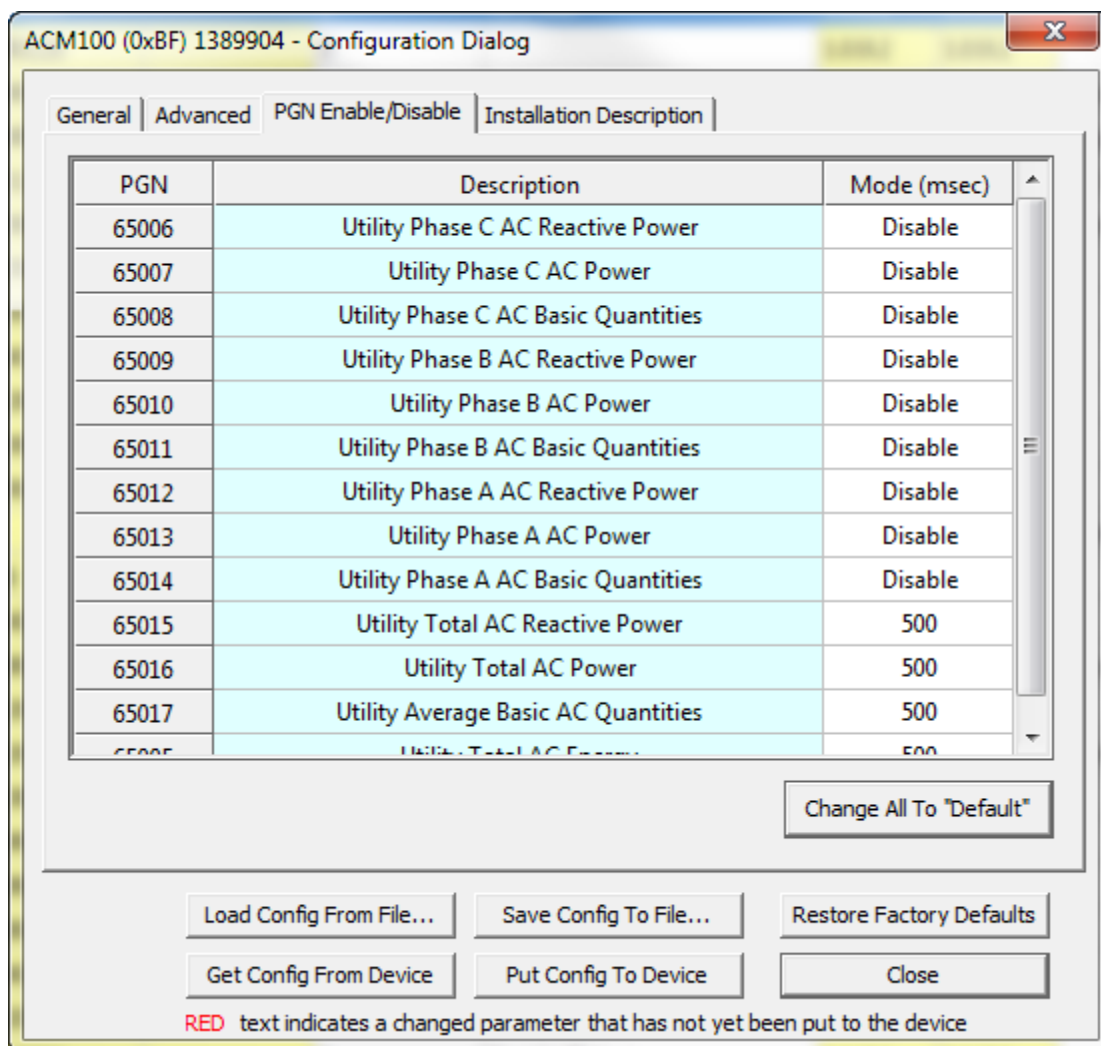


Figure 20 – ACM100 PGN Enable/Disable Tab

5.2.4 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

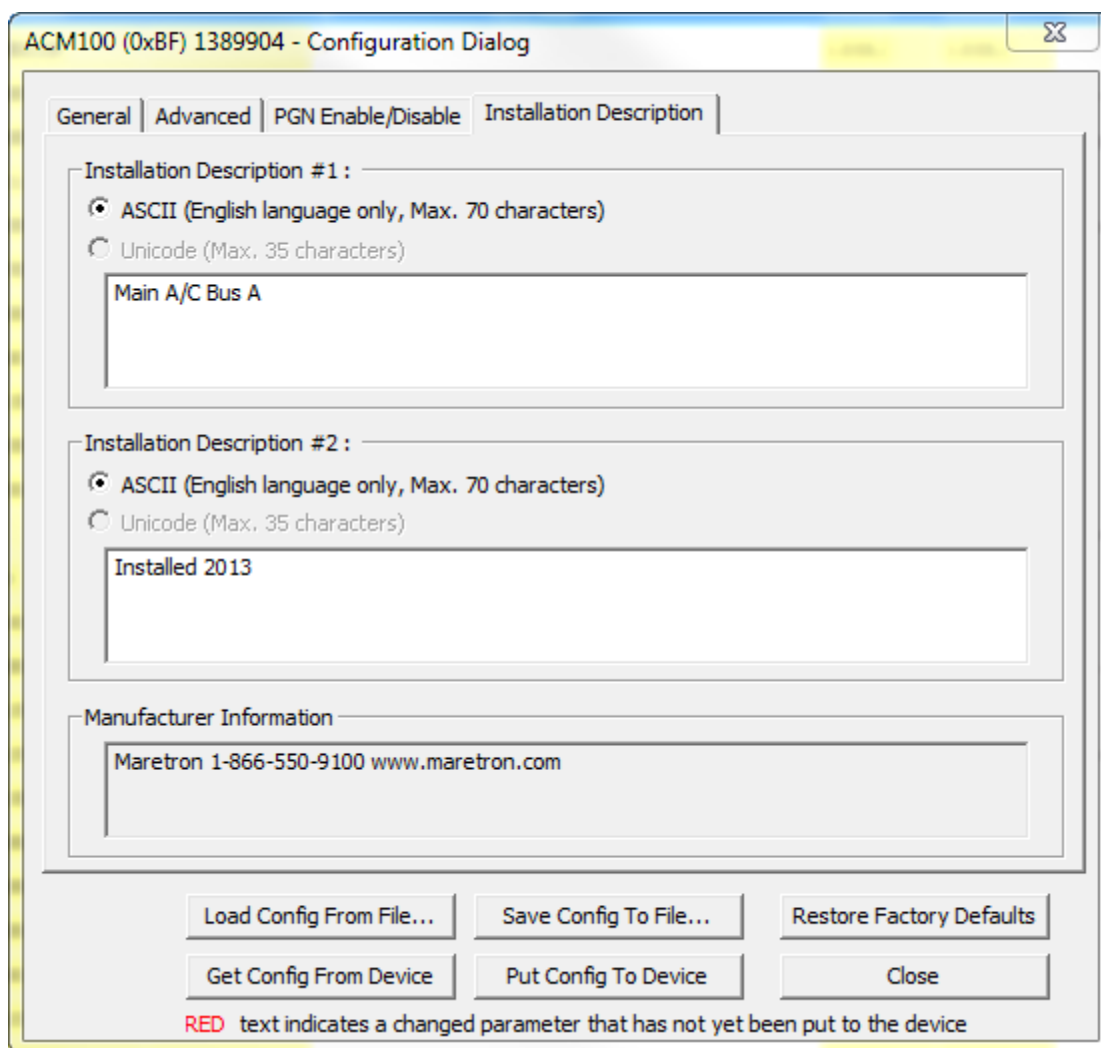


Figure 21 – ACM100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.3 ALM100

5.3.1 General Tab

This tab contains commonly-used configuration items.

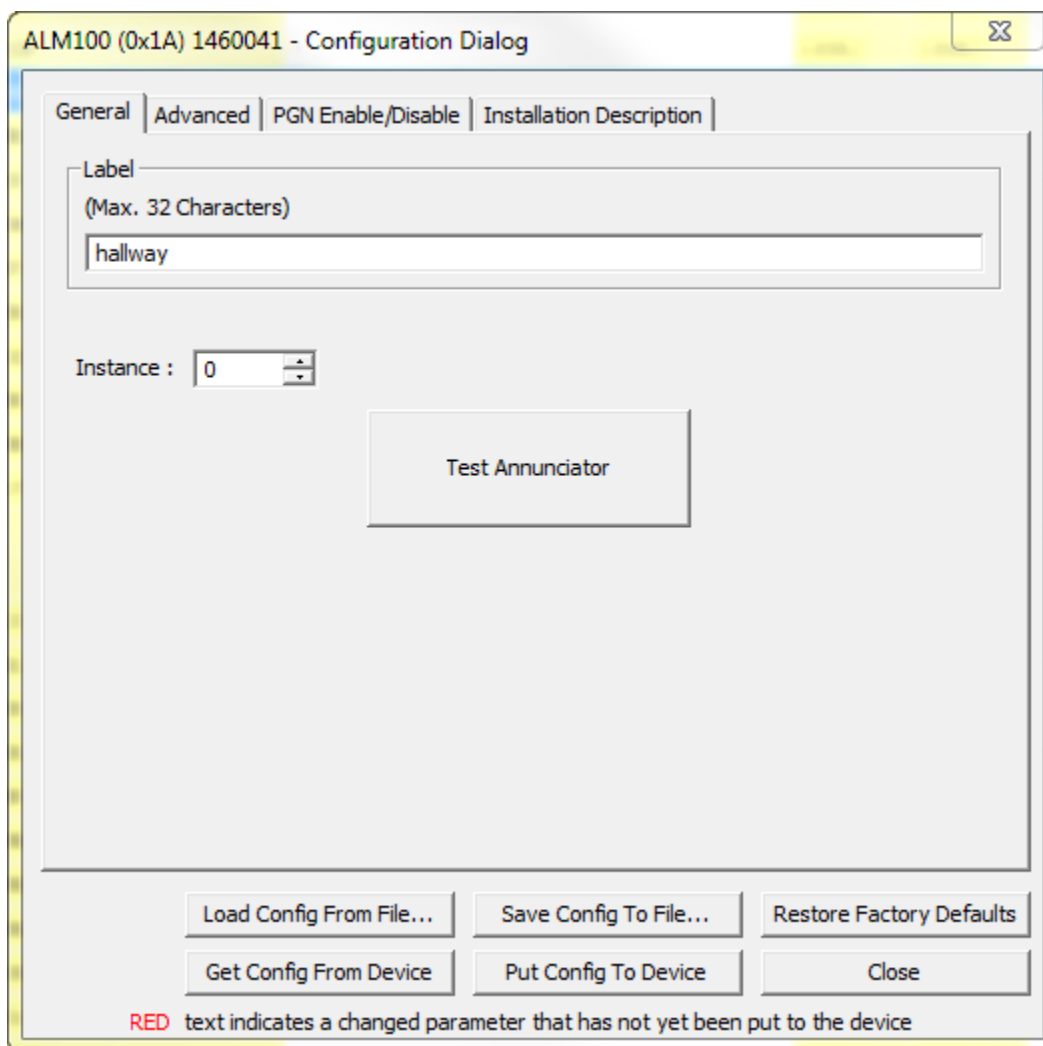


Figure 22 – ALM100 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Instance

NMEA 2000 provides for a unique annunciator instance for each alarm device on a vessel. This field allows a display device such as Maretron N2KView or a Maretron DSM series display to select different annunciators for sounding alarms for different alert types. For instance, an alert specific to engine operation may only sound in the engine room, pilot house, and crew quarters, while a general alarm would sound throughout the ship. This value should be programmed in each ALM100 so that each ALM100 is associated with a unique instance number. The default instance number is 0, which is used to indicate the first ALM100 that is hooked to the network. Subsequent ALM100s connected to the network would be numbered 1, 2, and so on.

Test Annunciator

Devices capable of configuring the ALM100 also can cause the ALM100 to generate an alarm indication, flashing the red alarm LED and sounding the annunciator. You may use this function to determine whether the ALM100 is properly connected and configured. When you select this option, the red alarm LED and annunciator will be activated for a short period of time.

5.3.2 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

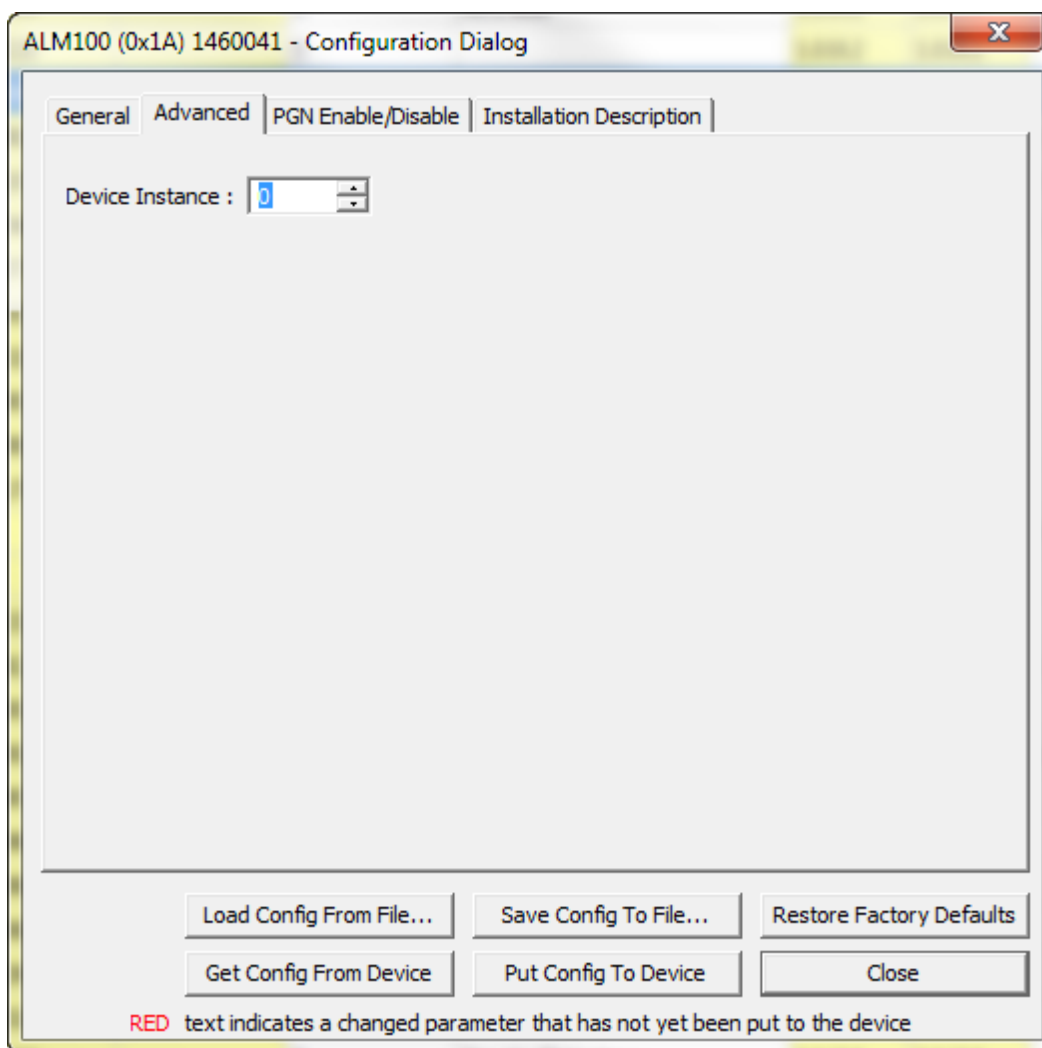


Figure 23 – ALM100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.3.3 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may configure the time interval between transmissions of a specific message for devices which support the configuring of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

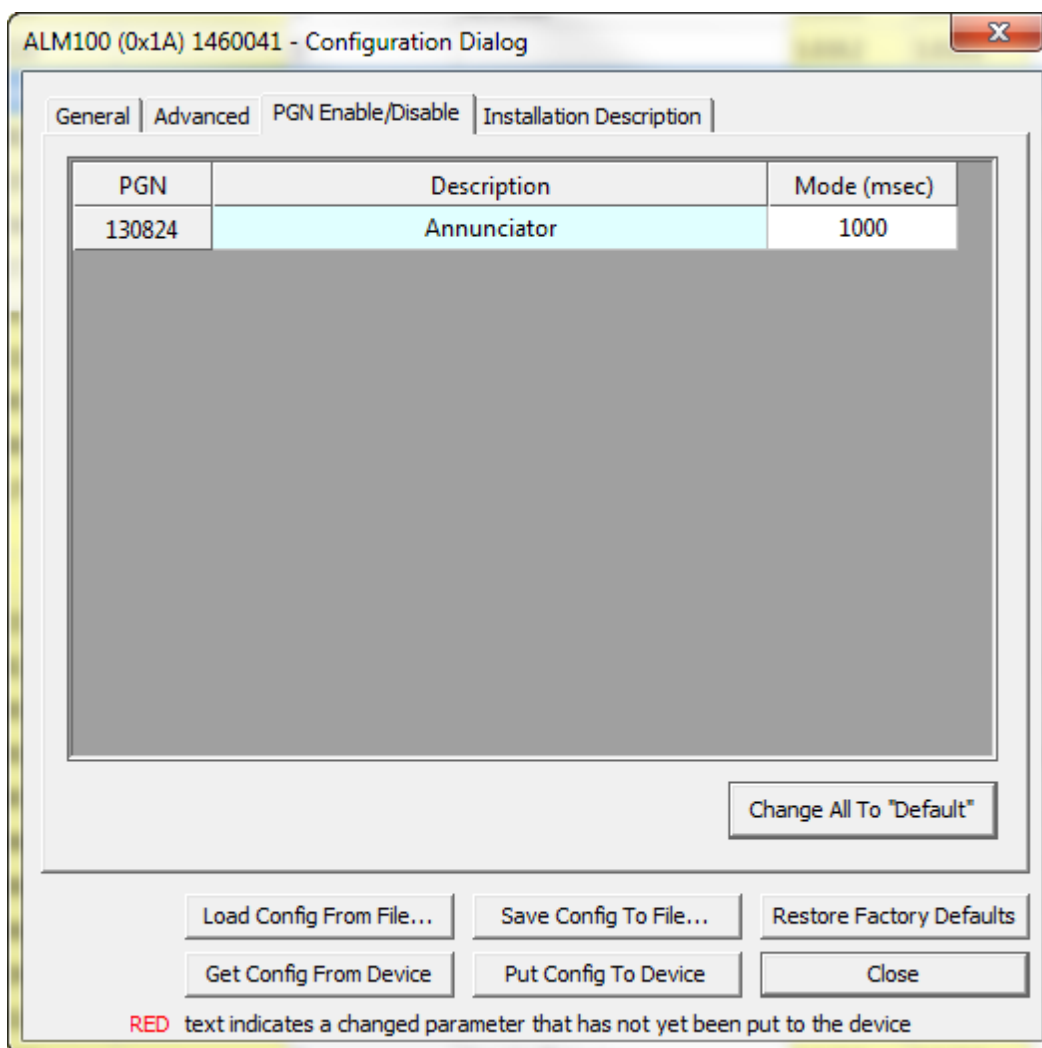


Figure 24 – ALM100 PGN Enable / Disable Tab

5.3.4 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

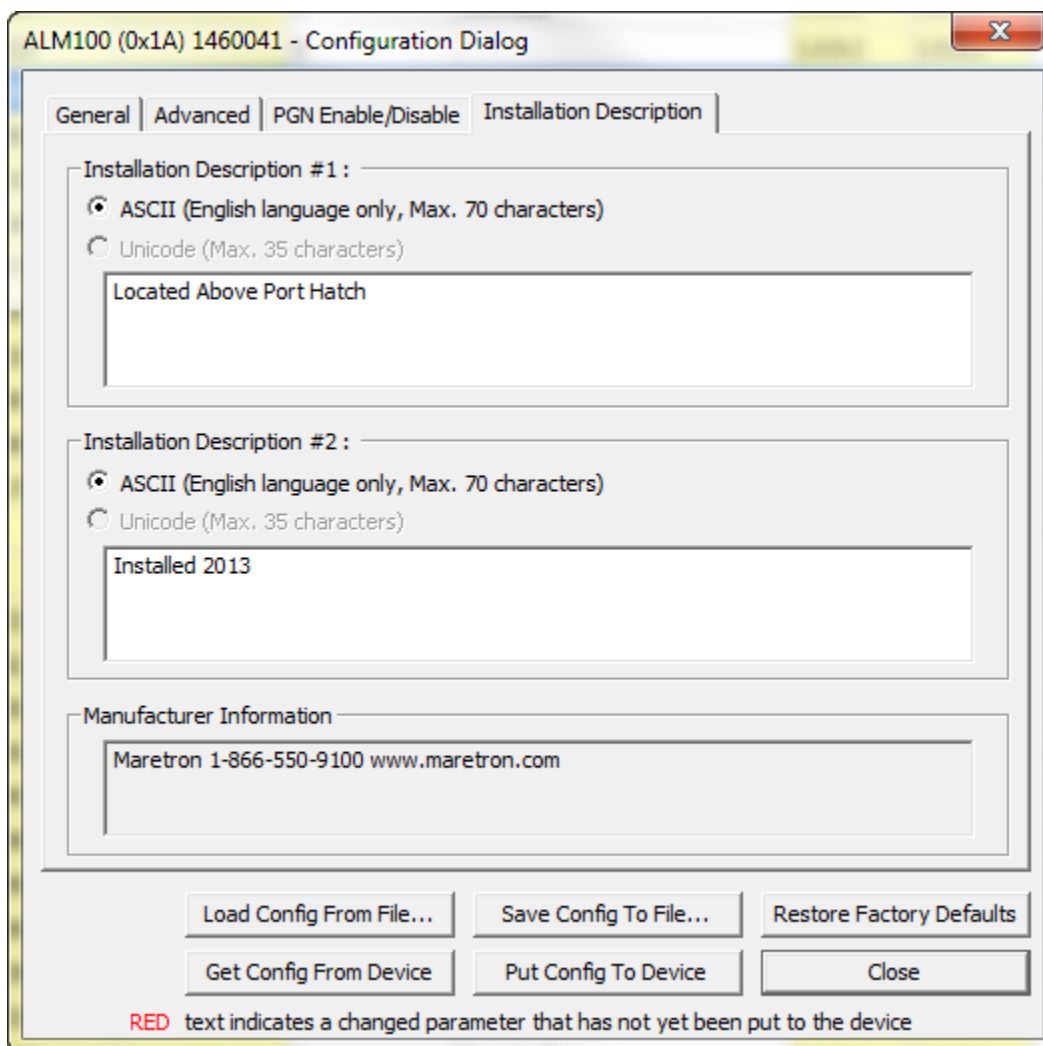


Figure 25 – ALM100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.4 CKM12

The CKM12 is a module which contains 12 membrane switches that is connected to the NMEA 2000 network. Each switch has an individual status output. Each switch has three LED's located next to each switch. Each LED can indicate the status of a controlled load on the network.

5.4.1 General Tab

This tab contains all CKM12 configuration items.

CKM12 (0x65) 1606247 - Configuration Dialog - CKM12_1606247

General

Instance: 50

Key #1 LED

Data Instance: 32 Indicator: 1

Key #2 LED

Data Instance: 32 Indicator: 2

Key #3 LED

Data Instance: 32 Indicator: 3

Key #4 LED

Data Instance: 32 Indicator: 4

Key #5 LED

Data Instance: 32 Indicator: 5

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 27 - CKM12 General Tab

Instance

This field indicates the data instance that will be transmitted with the switch status in the 127501 Binary Status Report status message. In the CKM12, the data instance always takes the same value as the device instance.

Key #x – LED #y

The CKM12 has twelve switches. Each switch has a separate LED indicator output.

Data Instance, Indicator

The LED will be lit whenever the indicator that corresponds to the selected data instance and indicator number is transmitting an ON state on the network. The LED will be dark otherwise.

5.5 CLM100

5.5.1 General Tab

This tab contains commonly-used configuration items.

CLM100 (0x59) 1659901 - Configuration Dialog

General | Advanced | PGN Enable/Disable | Installation Description

(Max. 32 Characters)
Aft Current Loop Monitor

Channel #0
Function : Rotational Rate Label : Shaft Speed
Instance : 0 Value at 4mA : 0.000 RPM Data Damping Period : 3.0 sec
Value at 20mA : 200.0 RPM

Channel #1
Function : Pressure Label : Hydraulic Oil Pressure
Instance : 1 Value at 4mA : 0.000 PSI Data Damping Period : 3.0 sec
Source : Water Pressure Value at 20mA : 2000 PSI

Channel #2
Function : Angle Label : Mast Angle
Instance : 2 Value at 4mA : 0.000 ° Data Damping Period : 3.0 sec
Value at 20mA : -15.60 °

Channel #3

Load Config From File... Save Config To File... Restore Factory Defaults
Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 26 – CLM100 General Tab

Label

A label may be assigned to each channel of the CLM100 as an aid to identifying the parameter that is being displayed. Typically, this label will describe the function or location of the sensor.

Function

The CLM100 can support 4-20mA current loop transducers of many different types. This field allows you to select the type of parameter that is being monitored by this channel. You may select from the following parameter types (please refer to the *CLM100 User's Manual* for information on the available units, ranges, and resolutions for each function).

- 4-20 mA
- DC Voltage
- DC Current
- Resistance
- Distance
- Velocity
- Acceleration
- Angle
- Angular Velocity
- Angular Acceleration
- Rotational Rate
- Temperature
- Pressure
- Humidity
- Force
- Flow Rate
- Strain
- dB (decibels)
- Battery
- Engine
- Transmission
- Vessel
- Generic Sensor
- Disable

Instance

From here the instance number used in the message sent for this channel may be set.

Source

This parameter is present only when the channel has been configured for the function of Temperature, Pressure, Humidity, or Flow Rate. This parameter selects the type of temperature, pressure, humidity, or flow rate measurement being performed so that displays can more easily select the data from the network.

Value at 4mA

Program this parameter to match the reading of the current loop transducer when it is sourcing a current of 4mA. You can determine this value by examining the specification of the transducer being used.

Value at 20mA

Program this parameter to match the reading of the current loop transducer when it is sourcing a current of 20mA. You can determine this value by examining the specification of the transducer being used.

Data Damping Period

You can configure a damping parameter to smooth the parametric readings or make them more responsive. The data damping is configurable between 0.1-25.0 seconds. The default data damping period is 3.0 seconds.

5.5.2 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

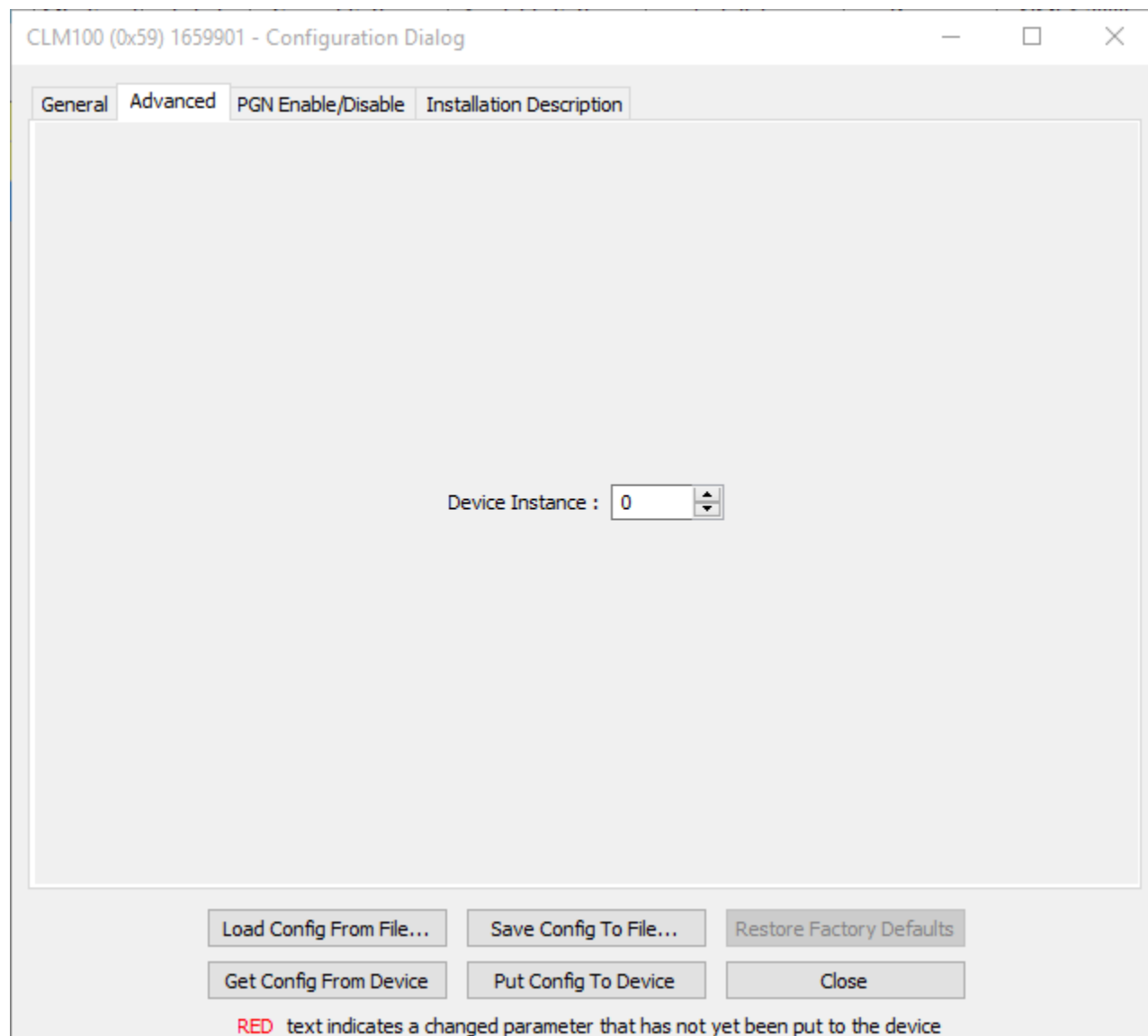


Figure 27 – CLM100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.5.3 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

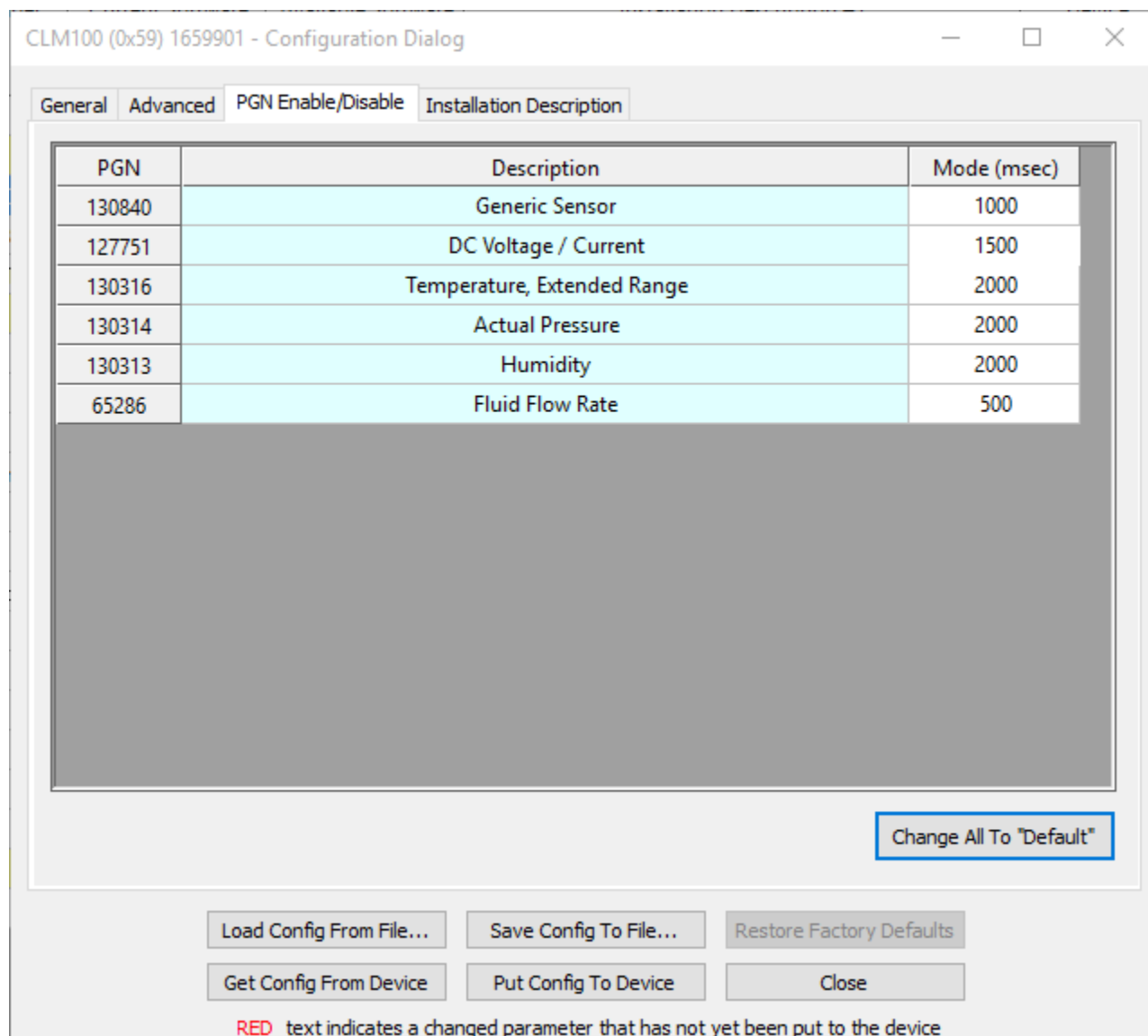


Figure 28 – CLM100 PGN Enable/Disable Tab

5.5.4 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

The screenshot shows a software window titled "CLM100 (0x59) 1659901 - Configuration Dialog". It has four tabs: "General", "Advanced", "PGN Enable/Disable", and "Installation Description", with the last one being active. The "Installation Description" tab contains three main sections. The first, "Installation Description #1:", has two radio buttons: "ASCII (English language only, Max. 70 characters)" (selected) and "Unicode (Max. 35 characters)". Below is a text input field. The second section, "Installation Description #2:", also has "ASCII (English language only, Max. 70 characters)" (selected) and "Unicode (Max. 35 characters)" radio buttons, with another text input field below. The third section, "Manufacturer Information", contains a text input field with the text "Maretron 1-866-550-9100 www.maretron.com". At the bottom, there are six buttons: "Load Config From File...", "Save Config To File...", "Restore Factory Defaults", "Get Config From Device", "Put Config To Device", and "Close". A red text note at the very bottom states: "RED text indicates a changed parameter that has not yet been put to the device".

Figure 29 – CLM100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc

5.6 CLMD12

The CLMD12 is a high power 12 output Solid State Power Controller featuring Deutsch connectors. In addition to fast switching, low loss solid state ON/OFF functions, it provides accurate current measurement, short circuit protection and Pulse-Width Modulation (PWM) function. The outputs can be connected in parallel for higher current capacity.

Relative to electromechanical relays, the CLMD12 can increase thermal efficiency by providing lower power dissipation and providing higher power-to-weight densities.

The CLMD12 can provide reductions in overall vessel weight and wiring complexity.

5.6.1 General Tab

This tab contains commonly used configuration items.

General | Flash Map | Discrete I/O | Inputs | Advanced | Installation Description | Control

Label
(Max. 32 Characters)
CLMD12 Cabin

Instance: 33

Input Voltage: 12 VDC

☐ Not Configured ☐ Serial Number Invalid

Breaker #1 (10A)

Label: Breaker #1

Trip Delay: 100 ms

Factory Current Rating: 10 A

State: OFF

Inrush Delay: 200 ms

Current Rating: 1 A

Default State: OFF

Default Dim Value: 100 %

Current: 0 A

Default Lock State: Unlocked

Current Dim Value: 100 %

Voltage: 0 V

Sound Alarm When Tripped: ☐

Dimming Allowed: ☐

Flash Map: 0

Manual Mode: ☐

Combine With: none

User Config Allowed: ☒

Status

☐ Short Load ☐ Breaker Locked

☐ Breaker Tripped

☐ Breaker ON

☐ Open Load

☐ Communications Error

☒ Breaker Communicating

Breaker #2 (10A)

Label: Breaker #2

Trip Delay: 100 ms

Factory Current Rating: 3 A

State: OFF

Inrush Delay: 200 ms

Current Rating: 3 A

Default State: OFF

Default Dim Value: 100 %

Current: 0 A

Default Lock State: Unlocked

Current Dim Value: 100 %

Voltage: 0 V

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 32 – CLMD12 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Instance

NMEA 2000 provides a unique instance number for each breaker box on a vessel. This read-only field shows the instance number assigned to this device. This instance number value is reflected in the 127501 Binary Switch Bank Status message. The instance number can be configured by changing the "Device Instance" field on the "Advanced" tab.

Input Voltage

This field allows you to configure nominal expected input voltage of the CLMD12. Choose from one of the following selections:

- 12 VDC
- 24 VDC
- 36 VDC
- Undefined

Not Configured

When lit, this read-only field indicates that the CLMD12 does not contain a valid configuration.

Serial Number Invalid

When lit, this read-only field indicates that the CLMD12 does not contain a valid serial number. Please contact Maretron support for assistance.

Breaker #*n*

This section contains settings for the specified circuit breaker. One of these sections is present for each of the breakers in the unit.

Label

This text box allows you to configure a text label for the breaker to identify it (for example, "RUNNING LIGHTS" or "HATCH"). For each breaker, set this to a value which describes the breaker so that you can easily identify it in display devices.

State

This read-only field indicates the current state of the breaker. It will contain one of the following values:

- OFF
- ON

Default State

This allows you to configure the state of the breaker when the CLMD12 is powered on. You can set this to one of the following values:

- OFF
- ON
- LAST STATE

Default Lock State

This parameter allows you to configure whether the breaker is locked when the CLMD12 is powered on. You can set this to one of the following values:

- LOCKED
- UNLOCKED

Sound Alarm When Tripped

This parameter allows you to configure whether an alarm is sounded on Carling OctoPlex Touch Screen displays whenever the breaker is tripped.

Manual Mode

This check box selection allows you to enable or disable Manual Mode. By default, devices such as an MFD or N2KView will have direct access to control all CLMD12 breakers. These devices communicate to the breakers by NMEA 2000 PGN 127500 or PGN 127501 via 126208 Command Group Function. When *Manual Mode* is enabled, commands from devices using NMEA 2000 PGN 127500 or PGN 127501 via 126208 Command Group Function is ignored. The CLMD12 instead will only allow for assigned Discrete I/O functions to control the breaker that has Manual Mode enabled. For more info regarding Discrete I/O functions please refer to section 5.6.3 'Discrete I/O Tab'.

Trip Delay

This parameter allows you to configure the trip delay for the breaker (the current through the breaker must exceed the current rating of the breaker for this amount of time for the breaker to trip). This can be set in the range of 0 ms to 750 ms.

Inrush Delay

This parameter allows you to configure the inrush delay for the breaker. When the breaker is switched from OFF to ON, the current through the breaker can exceed the current rating of the breaker for this amount of time without the breaker tripping. This allows for a brief period of current inrush, preventing the circuit from inadvertently tripping when energized. This can be set in the range of 0 ms to 1500 ms.

Default Dim Value

This parameter allows you to configure the percent dimming value for the breaker when the CLMD12 is powered on. This value will be applied only if the Dimming Allowed box is checked. This can be set in the range of 5% to 100%.

Current Dim Value

This read-only field shows the percent dimming value for the breaker.

Dimming Allowed

This parameter allows you to configure whether the channel is dimmable. Check this box to allow dimming commands to change the dimming level of the breaker and clear this box to force the breaker to operate at 100% dimming level.

Factory Current Rating

This parameter allows you to configure the maximum value to which the Current Rating can be configured. This parameter should be configured to the current rating for the wire connected to this breaker.

Current Rating

This parameter allows you to configure the desired trip level for this breaker. Exceeding this current will initiate a trip.

Current

This read-only field shows the real-time current passing through the breaker.

Voltage

This read-only field shows the real-time voltage at the load terminal of the breaker.

Flash Map

This parameter allows you to configure a breaker to use a flash map. A value of 0 means that the breaker is not assigned to any flash map, and a value of 1 through 15 assigns the breaker to the flash map corresponding to that number.

Combine With

This parameter allows you to group two breakers of equal rating so that you can power loads up to 180% the normal individual channel rating. The drop-down list shows only the valid channels that can be combined. Selecting a different channel will automatically deselect any prior grouping before selecting the new one.

User Config Allowed

This parameter allows you to configure whether configuration changes can be made to the breaker. If this is checked, configuration parameters for the breaker can be changed. If this is cleared, configuration parameters for the breaker cannot be changed.

Status

This group of indicators show real-time status of the breaker.

Short Load

When lit, this read-only field indicates that the breaker tripped due to a detected short circuit.

Breaker Locked

When lit, this read-only field indicates that the breaker has been locked and will not respond to switch commands on the network. The purpose of the lock feature is to avoid inadvertent or

accidental breaker state changes. The breaker must be unlocked before the breaker state can be remotely changed again.

Breaker Tripped

When lit, this read-only field indicates that the breaker has tripped due to an overcurrent condition. Switch the breaker OFF to acknowledge the 'breaker tripped' indication. You can then switch the breaker back to the ON position.

Breaker ON

When lit, this read-only field indicates that the breaker is in the ON state.

Open Load

When lit, this read-only field indicates an Open Load (no load) condition which indicates that the breaker is turned ON but there is little or no current being drawn. Possible conditions:

- External switch controlling load is in the OFF position
- If the connected load is a light, the bulb could be defective
- The load is mis-wired.
- The load is very small (less than 1.0 Amp)

Communications Error

When lit, this read-only field indicates that the breaker has lost communication with the main processor.

Breaker Communicating

When lit, this read-only field indicates that the breaker is communicating with the network.

5.6.2 Flash Map Tab

The Flash Function allows control of a breaker to be periodic. Common uses of this function include turning off a vent fan or light after a set period of time, etc. Three parameters dictate the behavior of the circuit and are detailed below. A maximum of 15 flash table entries may be defined.

General | **Flash Map** | Discrete I/O | Inputs | Advanced | Installation Description | Control

Flash Map 1
On time: 0.0 sec (0 = disabled) Off Time: 0.0 sec # Cycles: 0 (0 = forever)
Start Flash Cycle in Off state: ☐ Finish Flash Cycle in On state: ☐

Flash Map 2
On time: 0.0 sec (0 = disabled) Off Time: 0.0 sec # Cycles: 0 (0 = forever)
Start Flash Cycle in Off state: ☐ Finish Flash Cycle in On state: ☐

Flash Map 3
On time: 0.0 sec (0 = disabled) Off Time: 0.0 sec # Cycles: 0 (0 = forever)
Start Flash Cycle in Off state: ☐ Finish Flash Cycle in On state: ☐

Flash Map 4
On time: 0.0 sec (0 = disabled) Off Time: 0.0 sec # Cycles: 0 (0 = forever)
Start Flash Cycle in Off state: ☐ Finish Flash Cycle in On state: ☐

Flash Map 5
On time: 0.0 sec (0 = disabled) Off Time: 0.0 sec # Cycles: 0 (0 = forever)
Start Flash Cycle in Off state: ☐ Finish Flash Cycle in On state: ☐

Flash Map 6
On time: 0.0 sec (0 = disabled) Off Time: 0.0 sec # Cycles: 0 (0 = forever)
Start Flash Cycle in Off state: ☐ Finish Flash Cycle in On state: ☐

Load Config From File... Save Config To File... Restore Factory Defaults
Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 30 - CLMD12 Flash Map Tab

Cycles

This parameter allows you to configure the number of cycles that this flash map will execute after a breaker configured to use this flash map has been switched to the ON state. A value of 0 will repeat the cycle indefinitely, and values in the range of 1 cycle to 255 cycles will execute that number of cycles.

On Time

This parameter allows you to configure the time that a breaker will be ON during a cycle. This can be set to a value in the range of 0 seconds to 6553.5 seconds in increments of 0.1 seconds.

Off Time

This parameter allows you to configure the time that a breaker will be OFF during a cycle. This can be set to a value in the range of 0 seconds to 6553.5 seconds in increments of 0.1 seconds. A value of 0 will disable this flash map.

Start Flash Cycle in Off State

When enabled, this parameter allows you to configure the cycle to start its first cycle in the Off state rather than in the On state when not enabled.

Finish Flash Cycle in On State

When enabled, this parameter allows you to configure the cycle to finish cycling in the On state rather than in the Off state when not enabled.

5.6.3 Discrete I/O Tab

Up to thirty-six (36) Discrete I/O's can be configured. The Discrete I/O input signal could be any device transmitting NMEA 2000 PGN 127501 Binary Status Report. NMEA 2000 127501 Binary Status Report output messages are transmitted from various devices such as a Maretron CLMD, VMM or CKM device. The output status of the 127501 message can be configured to control the behavior of the CLMD12's breakers via the this Discrete I/O configuration. The 127501 Binary Status report message used for Discrete I/O purposes can pertain to the status of any CLMD product's hardwired input 'OnLevel status'. For example, please refer to the CLMD12 input 'OnLevels' in section 5.6.4 'Inputs Tab' / 'OnLevel(s)'. The 127501 Binary Status report message used for Discrete I/O purposes can also pertain to the status of any Maretron CKM key status or VMM switch status. One Discrete I/O can control multiple breakers up to the box limit. The Discrete I/O state is maintained independent of any breaker state. Therefore, if a breaker is being controlled from multiple Discrete I/O input signals, an "out of state" situation is possible when input signals are switched. For example: two independent latching signal wall switches connected to a CLMD unit's hardwired inputs are controlling the same light (CLMD12 breaker). Depending on the state of the wall switches signal, a second touch of a wall switch may be required to obtain the desired action of whether the light/ (CLMD12 Breaker) will be On or Off. For this reason, proper physical behavior of the input device will need to be considered. For control of a breaker from multiple points of control such as the example above, it would be advantageous to use two switches that output momentary signal behavior instead of latching signal behavior to avoid undesired control.

CLMD12 (0x90) 1671200 - Configuration Dialog

General Flash Map Discrete I/O Inputs Advanced Installation Description Control

Discrete I/O 1

Data Instance: 37 Indicator: 13

Manufacturer Code: 0 Discrete I/O Function: Toggle ON/OFF

Assigned Breakers

☐ 1	☐ 2	☐ 3	☐ 4	☒ 5	☐ 6	☐ 7	☐ 8
☐ 9	☐ 10	☐ 11	☐ 12				

Discrete I/O 2

Data Instance: 38 Indicator: 17

Manufacturer Code: 0 Discrete I/O Function: Toggle ON/OFF

Assigned Breakers

☐ 1	☐ 2	☐ 3	☒ 4	☐ 5	☐ 6	☐ 7	☐ 8
☐ 9	☐ 10	☐ 11	☐ 12				

Discrete I/O 3

Data Instance: 38 Indicator: 18

Manufacturer Code: 0 Discrete I/O Function: One Button Smooth

Assigned Breakers

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8
☐ 9	☒ 10	☐ 11	☐ 12				

Discrete I/O 4

Data Instance: 37 Indicator: 19

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 31 - CLMD12 Discrete I/O Tab

Data Instance

This parameter allows you to configure the data instance of the 127501 Binary Status Report message that will be used to control this discrete I/O circuit. To assign a discrete input from this device to this discrete I/O circuit, enter the instance value assigned to this device (the value of the "Instance" field on the "General" tab).

Indicator

This parameter allows you to configure the indicator number within the 127501 Binary Status Report status message whose instance field matches the "Data Instance" parameter for this channel that will be used to control this discrete I/O circuit.

Manufacturer Code

This parameter allows you to configure the manufacturer code that must be reported by the device transmitting the 127501 Binary Status Report message that will be used to control this discrete I/O circuit. Setting this value to 2047 means that any manufacturer code will be accepted.

Discrete I/O Function

This parameter allows you to configure how the specified 127501 Binary Status Report indicator will control the assigned breaker. The following functions may be selected:

Discrete I/O Function	Description
Always Turn ON	An inactive to active edge on the monitored signal turns the breaker ON
Always Turn OFF	An inactive to active edge on the monitored signal turns the breaker OFF
Toggle ON/OFF	An inactive to active edge on the monitored signal toggles the breaker from OFF to ON or from ON to OFF
Brighten	An inactive to active edge on the monitored signal increases the dimming level by 1%
Dim	An inactive to active edge on the monitored signal decreases the dimming level by 1%
Flash	An inactive to active edge on the monitored signal turns the breaker ON and uses a predefined 1s On 1s Off flash behavior.
Turn OFF w/Lock	The breaker turns OFF and stays LOCKED as long as the monitored signal is active. The breaker stays OFF but becomes UNLOCKED when the monitored signal becomes inactive
Unlock	Unlocks breaker (state does not change)
One Button Smooth High-to-Low	A single press changes breaker state. Press and hold wall switch to turn ON; hold for High to Low voltage decrease (5% increments). Continuing to hold will reset to 100% intensity and repeat.
One Button Smooth Low-to-High	A single press changes breaker state. Press and hold wall switch to turn ON; hold for Low to High dimming level increase (5% increments). Continuing to hold will reset to 5% dimming level and repeat.
Smooth Scroll	A momentary touch turns breaker ON only; continuing to hold scrolls dimming level UP and DOWN (last known state is retained).
One Button Smooth Scroll	A momentary touch changes breaker state; continuing to hold scrolls dimming level UP and DOWN (last known state is retained).

Discrete I/O Function	Description
Discrete Momentary	The breaker stays on as long as the monitored signal remains active. The breaker turns OFF when the input becomes inactive.

Assigned Breakers

This parameter allows you to configure the breakers that will be controlled by this discrete I/O channel. You may select any number of the breakers.

5.6.4 Inputs Tab

The CLMD12 has seven digital inputs. These inputs can be configured on the Inputs tab. The states of these input channels are transmitted in a 127501 Binary Status Report message as indicators 13 (Input Channel #1) through 19 (Input Channel #7).

General | Flash Map | Discrete I/O | **Inputs** | Advanced | Installation Description | Control

Instance: 33

Input 1 (Channel/Indicator 13)
Label: **Galley Lights** OnLevel(s): Low State: OFF
☐ Transmit Battery Voltage

Input 2 (Channel/Indicator 14)
Label: **Port Engine Battery Voltage** OnLevel(s): Low State: OFF
☒ Transmit Battery Voltage Battery Instance: 1

Input 3 (Channel/Indicator 15)
Label: **Stbd Engine Battery Voltage** OnLevel(s): Low State: OFF
☒ Transmit Battery Voltage Battery Instance: 2

Input 4 (Channel/Indicator 16)
Label: Input #4 OnLevel(s): Low State: OFF
☐ Transmit Battery Voltage

Input 5 (Channel/Indicator 17)
Label: Input #5 OnLevel(s): Low State: OFF
☐ Transmit Battery Voltage

Load Config From File... Save Config To File... Restore Factory Defaults
Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 32 - CLMD12 Inputs Tab

Instance

This read-only field indicates the data instance used for this box. The value that appears here can be changed by setting the “Device Instance” parameter on the Advanced tab.

Channel / Indicator

Label

Each channel has a text label you can set to identify the input signal monitored by that channel (for example, “BILGE PUMP” or “HATCH”). For each channel, set this to a value which describes the input being monitored so that you can easily identify it in display devices.

OnLevel(s)

This parameter allows you to configure the voltage level on the input signals that corresponds to an ON status on the input as reported on the network. You can use any of the following settings:

- High – a high voltage level on the input is represented as an ON value on the network. A high impedance or a low voltage level on the input is represented as an OFF value on the network.
- Low – a low voltage level on the input is represented as an ON value on the network. A high impedance or a high voltage level on the input is represented as an OFF value on the network.
- Both – a high voltage level or a low voltage level on the input is represented as an ON value on the network. A high impedance on the input is represented as an OFF value on the network.

State

This read-only field represents the current state of the input signal as reported on the network.

Transmit Battery Voltage / Battery Instance

When ‘Transmit Battery Voltage’ is enabled, the ‘Battery Instance’ Dialog will appear. By enabling this feature, the CLMD12 will transmit an instance of 127508 Battery Status PGN on the NMEA 2000 network. The Battery Status data instance for this PGN is determined by the ‘Battery Instance’ number entered.

5.6.5 Advanced Tab

The Advanced tab is used to configure and observe parameters that do not normally require changing.

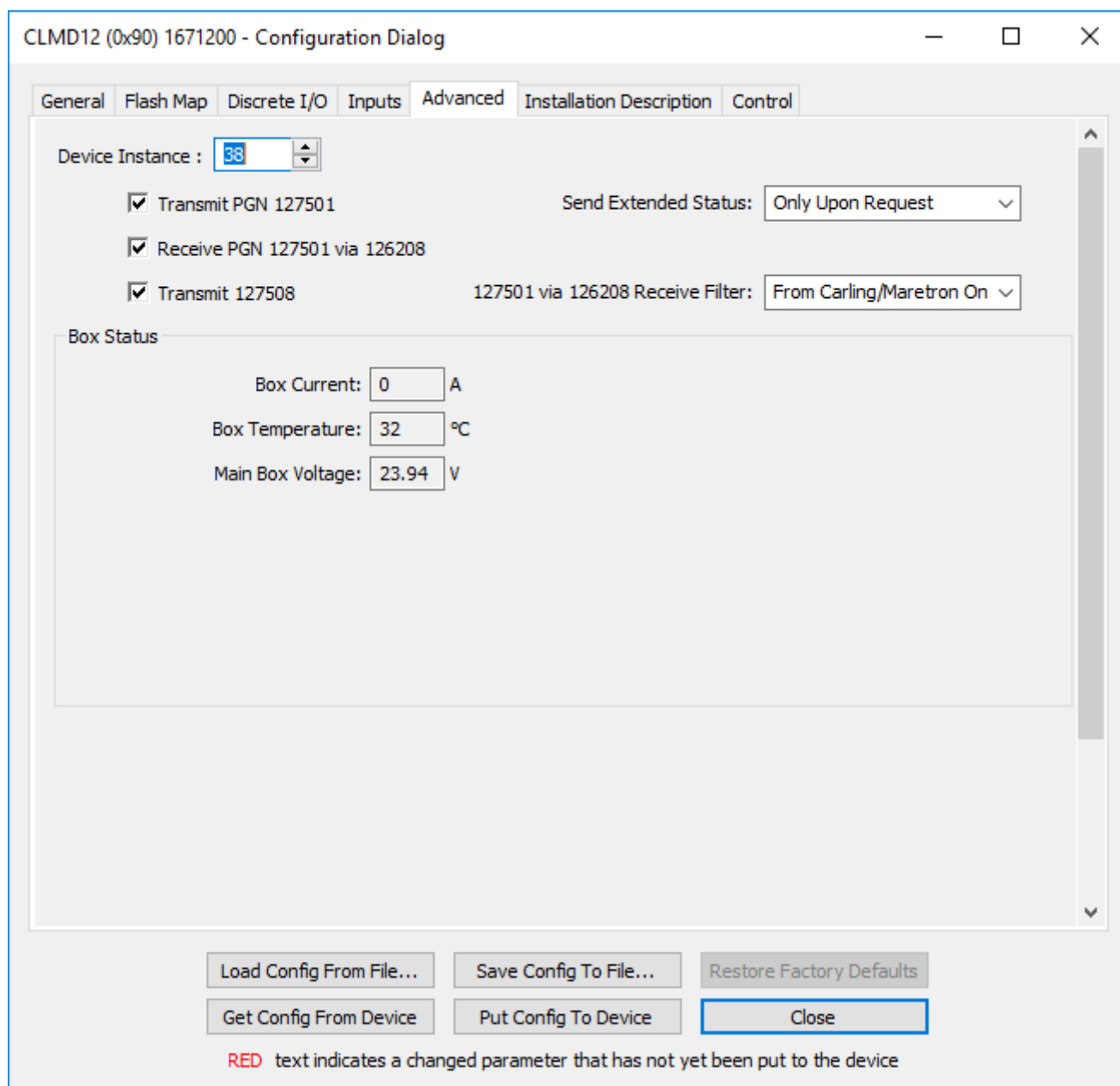


Figure 33 - CLMD12 Advanced Tab

Device Instance

This parameter allows you to configure the NMEA 2000 device instance used by the device. This value is also used as the data instance in the 127501 Binary Status Report messages transmitted by the device and can be seen on the General Tab as well as the Inputs Tab labeled as "Instance".

Transmit PGN 127501

This parameter allows you to configure whether the device transmits the 127501 Binary Status Report status NMEA 2000 message. If this field is set, the device will transmit the 127501

Binary Statue Report message along with proprietary messages. If this field is cleared, the device will not transmit the 127501 message and will transmit only proprietary messages.

Receive PGN 127501 via 126208

This parameter allows you to configure whether the device will respond to the NMEA command of an indicator in the 127501 Binary Status Report message. If this field is set, the device will respond to that message. If this field is cleared, the device will not respond to that message, but only to proprietary messages.

Transmit 127508

This parameter allows you to configure whether the device will transmit the 127508 Battery Status message to indicate the box temperature, input voltage, and input current. If this field is set, the device will transmit the 127508 message. If this field is cleared, the device will not transmit the 127508 message.

Send Extended Status

This parameter allows you to configure when the CLMD12 sends the extended box status proprietary message. There are two settings for this parameter:

- Only send when an error is detected
- Only send upon request

127501 via 126208 Receive Filter

This parameter allows you to configure from which devices the CLMD12 will accept 126208 NMEA Commands of the 127501 Binary Status Report message. There are two settings for this parameter:

- From Carling/Maretron devices only
- From any manufacturer's device

Box Status:

Box Current

This read-only field indicates the total current passing through the device.

Box Temperature

This read-only field indicates the internal temperature of the device.

Main Box Voltage

This read-only field indicates the voltage of the power input for the device.

5.6.6 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

The screenshot shows a configuration dialog box titled "CLMD12 (0x90) 1671200 - Configuration Dialog". It has several tabs: "General", "Flash Map", "Discrete I/O", "Inputs", "Advanced", "Installation Description" (which is selected), and "Control".

Under the "Installation Description" tab, there are two sections:

- Installation Description #1 :**
 - ☒ ASCII (English language only, Max. 70 characters)
 - ☐ Unicode (Max. 35 characters)
 - A text input field containing "DC#7-38 Tee Top".
- Installation Description #2 :**
 - ☒ ASCII (English language only, Max. 70 characters)
 - ☐ Unicode (Max. 35 characters)
 - An empty text input field.

Below these sections is a **Manufacturer Information** section with an empty text input field.

At the bottom of the dialog, there are six buttons: "Load Config From File...", "Save Config To File...", "Restore Factory Defaults", "Get Config From Device", "Put Config To Device", and "Close". The "Close" button is highlighted with a blue border.

Below the buttons, a red text note states: "RED text indicates a changed parameter that has not yet been put to the device".

Figure 34 - CLMD12 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.6.7 Control Tab

This tab allows you to control the ON/OFF state and dimming level of the breakers on the device. This is normally used for testing purposes.

General | Flash Map | Discrete I/O | Inputs | Advanced | Installation Description | **Control**

1	2	3	4	5	6	7	8
☐	☐	☐	☐	☐	☐	☐	☐
ON	ON	ON	ON	ON	ON	ON	ON
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

9	10	11	12
☐	☐	☐	☐
ON	ON	ON	ON
OFF	OFF	OFF	OFF

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 35 - CLMD12 Control Tab

Status LED

When lit, this read-only field indicates that the breaker is in the ON state. When extinguished, this field indicates that the breaker is in the OFF state.

ON/OFF Buttons

These buttons replicate Network Input commands. The ON button allows you to switch the breaker into the ON state and the OFF button allows you to switch the breaker into the OFF state providing the Direct Network Input control is enabled by 'Manual Mode' on the General Tab is disabled.

Dimmer Slider

The blue slider bar allows you to configure the dimming level of a breaker between 5% and 100% provided 'Dimming Allowed' on the General Tab is enabled. The read-only green bar graph shows the real-time dimming level of the breaker.

5.7 CLMD16

The CLMD16 will transmit data over the NMEA 2000 network as it is shipped from the factory; however, it may require configuration, depending on the type of switches monitored and the number of similar products on the NMEA 2000 network. There are several configurable items within the CLMD16, which are detailed in the remainder of this section.

The CLMD16 is configured using Maretron N2KAnalyzer. The following subsections describe the configurable parameters in the CLMD16.

Available Input Signals

Successful CLMD16 configuration relies on input signals being applied to the various switching application logic elements of the CLMD16 software. There are many signals that are available to connect as inputs for the various logic elements in the switching application. The table below is a complete list of the available signals.

Available Input Signals:

Signal Name	Description
None Selected	This connects the specified input to a constant Logic '0' value
Input 1 through 12 Low	The signal on hardwired input 1 through 12 is in the Low voltage range
Input 1 through 12 Float	The signal on hardwired input 1 through 12 is in the Float voltage range
Input 1 through 12 High	The signal on hardwired input for the numbered channel is in the High voltage range
Network Input 1 through 16	The state of the signal on Network Input for the numbered channel
Logic Output 1 through 48	The state of the output of Logic Element for the numbered channel
Latch Output 1 through 16	The state of the output of Latch Element for the numbered channel
Toggle Output 1 through 16	The state of the output of Toggle Element for the numbered channel
Timer Output 1 through 16	The state of the output of Delay Timer Element for the numbered channel
Flash Output 1 through 16	The state of the output of Flash Element for the numbered channel
Counter Active 1 through 16	The state of the output of Counter Element 1 through 16
Over Current Fault Ch 1 through 16	An Over Current Fault has been detected on Channel 1 through 16
Ch 1 through 16 Tripped	The circuit breaker for the numbered channel is tripped
Ch 1 through 16 Thermal Limit Hit	The circuit breaker for the numbered channel has reached its thermal limit
Discrete I/O 1 through 32	The discrete state I/O of the signal the numbered channel
Breaker On 1 through 16	The state of an Output Channel for the numbered channel

These input signals will be applied within fields of N2KAnalyzer dialog box fields named: "Input Signal", "Enable Signal", "Set Signal", "Reset Signal", "Increment Signal", "Decrement Signal", "Delay Signal", or "Toggle Signal" depending on the logic type being used.

5.7.1 General Tab

This tab contains commonly used configuration items.

CLMD16 (0x00) 1540225 - Configuration Dialog

General | Control | Alarm | Advanced | Counter | Flash | Grouping | Inputs | Tanks | Latch | LoadShedding | Logic

Label (Max. 32 Characters)
CLMD16 #32 Instance: 32

Breaker #1
Label: Cabin Lights Manual Mode: ON Type: PWM
State: OFF Long Time Delay: FAST Input Signal: Logic Output 1
PWM Default: 100 % Instantaneous Pickup: 10 Toggle Mode: OFF
Current Rating: 3.5 A Short Time Pickup: 6.0 PWM Counter: Counter 1
Status
☐ Tripped ☐ Thermal Protection ☐ Short To Battery
☐ Instant Trip ☐ Load Shed ☒ Open Load
☐ Short Time Trip ☐ Hardware Fault ☐ Over Current
☐ Long Time Trip ☐ Short To Ground
Default State: OFF
Def. Lock State: Unlocked
Voltage: 0.692 V
Current: 0.800 A

Breaker #2
Label: Livewell Light Manual Mode: OFF Type: DC
State: OFF Long Time Delay: FAST Input Signal: Network Input 2
Instantaneous Pickup: 10 Toggle Mode: OFF
Current Rating: 2 A Short Time Pickup: 6.0

Load Config From File... Save Config To File... Restore Factory Defaults
Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 36 - CLMD16 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Instance

NMEA 2000 provides a unique instance number for each breaker box on a vessel. This read-only field shows the instance number assigned to this device. This instance number value is reflected in the 127501 Binary Status Report message. The instance number can be configured by changing the “Device Instance” field on the “Advanced” tab.

Breaker #*n*

This section contains settings for the specified electronic circuit breaker (ECB). One of these sections is present for each of the breakers in the unit.

Label

This text box allows you to configure a text label for the breaker to identify it (for example, “RUNNING LIGHTS” or “HATCH”). For each breaker, set this to a value which describes the breaker so that you can easily identify it in display devices.

Manual Mode

This drop-down selection allows you to enable or disable Manual Mode. By default, devices such as an MFD or N2KView will have direct access to control all CLMD16 breakers. These devices communicate to the breakers by NMEA 2000 PGN 127500 or PGN 127501 via 126208 Command Group Function. When *Manual Mode* is enabled, commands from devices using NMEA 2000 PGN 127500 or PGN 127501 via 126208 Command Group Function is ignored. The CLMD16 instead will only allow for *Network Inputs 1-16* from the *Available Signals* list to be used as inputs within the switching application. Please refer to section 5.7 / ‘Available Input Signals’ for more information on ‘*Network Inputs 1-16*’. The *Manual Mode* feature can be used to funnel commands from any device using 127500 or 127501 via 126208 PGN into CLMD16 Switching Application Logic. For example, with *Manual Mode* On, a breaker’s *Network Input* signal received from an MFD may be directed into any CLMD16 Switching Element(s) then back into the breaker control input allowing for ultimate configurability such as sequencing, special lighting control, modes, and group switching commanded by the MFD whereas this function would not be possible using direct breaker control via NMEA 2000 PGN 127500 or PGN 127501 via 126208 Command Group Function. *Manual Mode* can also be used to simply ignore direct breaker commands for breakers that are designated for load sequencing, or sub-routines controlled elsewhere. Manual Mode also can be used for breakers needing to be controlled by single designated points rather than NMEA2000 network wide access to command the breaker.

State

This read-only field indicates the current state of the breaker. It will contain one of the following values:

- OFF – the breaker is currently off (not supplying power)
- ON – the breaker is currently on (supplying power)
- TRIP/ERROR – the breaker is currently off (not supplying power) due to an overcurrent or error condition

PWM Default

This value will be the value that the PWM% will be when the breaker is turned On if the Counter switching application is not selected. Please note if PWM is changed via Network Input the value of PWM the next time the channel is turned On will be the last state of PWM and the PWM Default will not be applicable until the next power cycle.

Default State

This allows you to configure the state of the breaker when the CLMD16 is powered on. You can set this to one of the following values:

- OFF – the breaker will be OFF after the CLMD16 is powered on
- ON – the breaker will be ON after the CLMD16 is powered on
- LAST STATE – after the CLMD16 is powered on, the breaker will be set to the state it was in when power was last removed

Default Lock State

This parameter allows you to configure whether the breaker is locked when the CLMD16 is powered on. You can set this to one of the following values:

- LOCKED – the breaker is locked; i.e., it's state will not change due to network inputs
- UNLOCKED – the breaker is unlocked and its state will respond normally to network inputs

Type

This parameter allows you to configure the desired operating mode for this breaker. You can choose one of the following:

- DC – the breaker may be controlled OFF and ON.
- PWM – this breaker may be controlled OFF and ON and may be dimmed by altering the changing duty cycle of the PWM counter assigned to the breaker.
- Soft Start DC – the breaker may be controlled OFF and ON. When the breaker is turned ON, the power starts in PWM mode with the duty cycle set by "Soft Start %" parameter, and then ramps to fully ON over the next one second time interval.
- Full-Bridge – if both breakers in a H-bridge pair (i.e., 1 and 2, or 11 and 12) are configured to Full-bridge, then the two breakers will work together as a full bridge (or H-bridge). The full bridge may be controlled OFF and ON, and its direction may be controlled.
- Soft Start Full-Bridge – if both breakers in a H-bridge pair (i.e., 1 and 2, or 11 and 12) are configured to Soft Start Full-bridge, then the two breakers will work together as an full bridge (or H-bridge) with the soft start feature enabled. The full bridge may be controlled OFF and ON, and its direction may be controlled. When the breaker is turned ON, the power starts in PWM mode with the duty cycle set by "Soft State %" parameter, and then ramps to full ON over the next one second time interval.

Current Rating

This parameter allows you to configure the desired trip level for this breaker. Exceeding this current for a time period set by the value of the Long Time Delay parameter along with the i^2t breaker model will initiate a trip.

Instantaneous Pickup

This parameter allows you to configure the instantaneous pickup for the breaker. This can be set in the range of 5 to 20 with a resolution of 1. This parameter is a multiplier of the current rating. For example, if the current rating for the breaker is set to 6 A and the instantaneous pickup parameter is set to a value of 10, then the instantaneous pickup current will be 60 A (6 A * 10).

Short Time Pickup

This parameter allows you to configure the short time pickup for the breaker. This can be set in the range of 1.5 to 6.0 with a resolution of 0.1. This parameter is a multiplier of the current rating. For example, if the current rating for the breaker is set to 6 A and the short time pickup parameter is set to a value of 4, then the short time pickup current will be 24 A (6 A * 4).

Input Signal

This parameter allows you to select the internal signal that determines the state of this breaker. You may choose a signal from the Available Input Signals list in Section 5.7.

Toggle Mode

This parameter allows you to select Toggle Mode On or Off. When this mode is enabled, the state of the ECB will change to the opposite state, whether On or Off, with every Rising Edge of an ECB Input Signal.

PWM Counter

This parameter allows you to select which PWM counter controls the dimming level for this breaker. You may choose any of the eight counter elements.

Long Time Delay

This parameter allows you to configure the long time delay for the breaker. This can be set to one of the following values:

- FAST (5 seconds)
- MEDIUM (10 seconds)
- SLOW (20 seconds)

Current

This read-only field shows the real-time current passing through the breaker.

Voltage

This read-only field shows the real-time voltage at the load terminal of the breaker.

Status

This group of indicators show real-time status of the breaker.

Tripped

When lit, this read-only field shows that the breaker is in the TRIP state.

Instant Trip

When lit, this read-only field indicates that the breaker has tripped due to the instant trip feature.

Short Time Trip

When lit, this read-only field indicates that the breaker has tripped due to the short time trip feature.

Long Time Trip

When lit, this read-only field indicates that the breaker has tripped due to the long time trip feature.

Thermal Protection

When lit, this read-only field indicates that the breaker has been turned off due to the thermal protection feature.

Load Shed

When lit, this read-only field indicates that the breaker has been turned off due to the load shedding feature.

Hardware Fault

When lit, this read-only field indicates that the breaker has been turned off due to a hardware fault being detected.

Short To Ground

When lit, this read-only field indicates that the breaker has been turned off due to it being detected shorted to ground.

Short To Battery

When lit, this read-only field indicates that the breaker has been turned off due to it being detected shorted to the battery or DC supply voltage.

Over Load

When lit, this read-only field indicates that the breaker has tripped due to an over load being detected.

Open Circuit

When lit, this read-only field indicates an Open Circuit (no load) condition which indicates that the breaker is turned ON but there is little, or no current being drawn. Possible conditions:

- External switch controlling load is in the OFF position

- If the connected load is a light, the bulb could be defective
- The load is mis-wired
- The load is very small (less than 1.0 Amps)

Breaker Locked

When lit, this read-only field indicates that the breaker has been locked and will not respond to switch commands on the network. The purpose of the lock feature is to avoid inadvertent or accidental breaker state changes. The breaker must be unlocked before the breaker state can be remotely changed again.

5.7.2 Control Tab

The Control tab allows you to toggle the configured Network Input channels of the CLMD16. Each On / Off control number corresponds with Network Input numbers 1-16. When a Network Input is turned on in this dialog, the associated circuit that the Network Input is configured to control will be controlled.

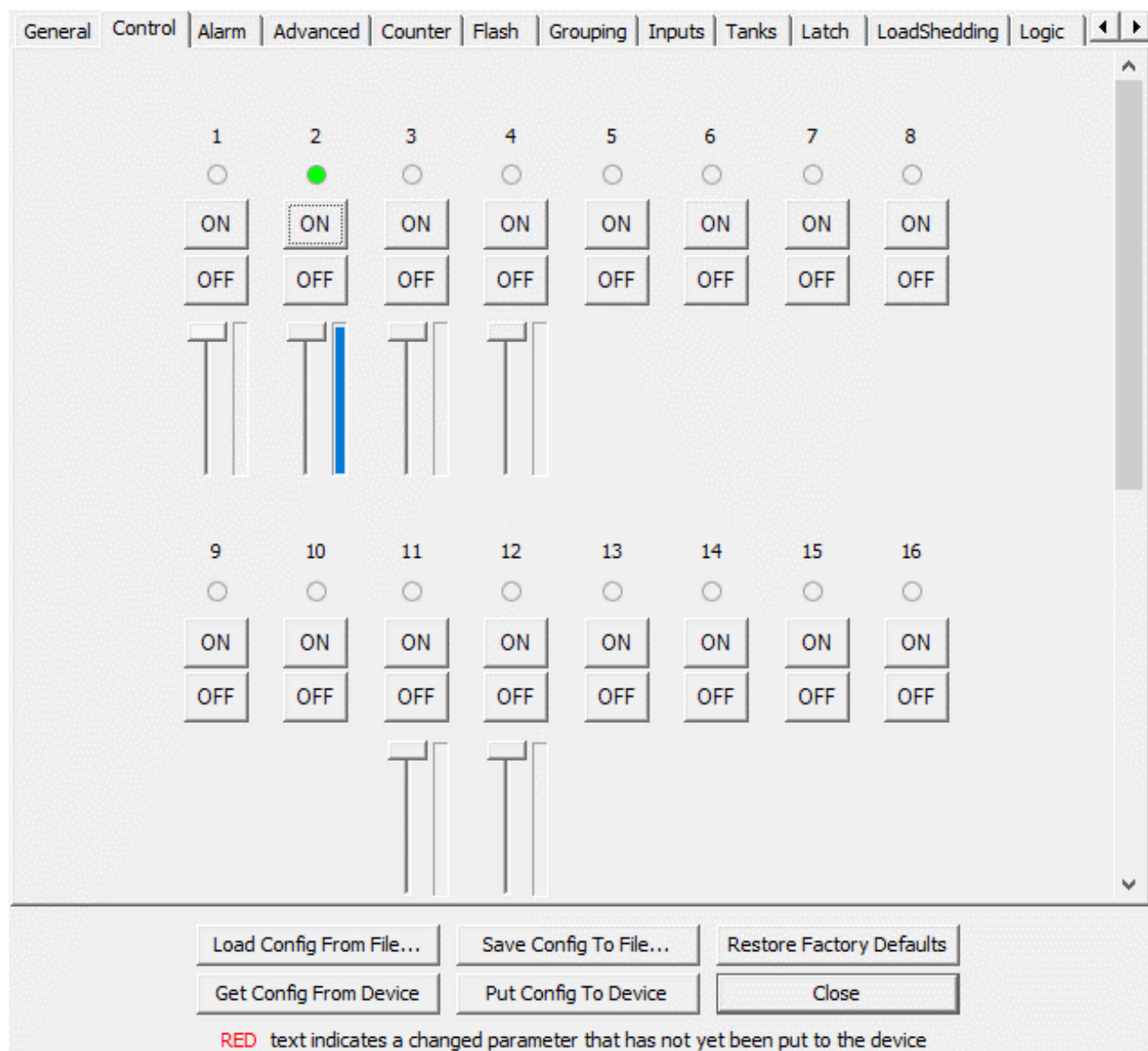


Figure 37 – CLMD16 Control Tab

5.7.3 Alarm Tab

The Alarm tab allows you to select an internal signal to be used to control the alarm outputs of the CLMD16. You may choose a signal from the Available Input Signals list in Section 0..

The screenshot shows the 'Alarm' tab in the CLMD16 configuration software. The window has a tabbed interface at the top with the following tabs: General, Control, Alarm (selected), Advanced, Counter, Flash, Grouping, Inputs, Tanks, Latch, LoadShedding, and Logic. The main area of the window is light gray and contains a single configuration item: 'Alarm Enable Signal:' followed by a dropdown menu. The dropdown menu is currently set to 'None Selected'. At the bottom of the window, there is a row of six buttons: 'Load Config From File...', 'Save Config To File...', 'Restore Factory Defaults', 'Get Config From Device', 'Put Config To Device', and 'Close'. Below these buttons, a red text label reads: 'RED text indicates a changed parameter that has not yet been put to the device'.

Figure 38 – CLMD16 Alarm Tab

Alarm Enable Signal

This parameter allows you to select an internal signal to be used to control the alarm outputs. The alarm outputs are connected whenever this signal is active high. You may choose a signal from the Available Input Signals list in Section 5.7.

5.7.4 Counter Tab

The CLMD16 has sixteen counter elements.

The screenshot displays the 'Counter' tab in the N2KAnalyzer V3 software. The interface is organized into three main sections for Counter #1, Counter #2, and Counter #3. Each section contains a set of configuration parameters:

- Counter #1:**
 - Increment Signal: **Input 1 Low** (RED text)
 - Decrement Signal: (empty)
 - Reset Signal: None Selected
 - Counter Type: **One Button Smooth !** (RED text)
 - Min Set Point: **5** (RED text)
 - Max Set Point: **100** (RED text)
 - Press Step Size: 0
 - Hold Step Size: 1
 - Hold Step Time: 0.02 s
 - Hold Period: 0.50 s
- Counter #2:**
 - Increment Signal: None Selected
 - Decrement Signal: None Selected
 - Reset Signal: None Selected
 - Counter Type: Active High
 - Min Set Point: 0
 - Max Set Point: 0
 - Press Step Size: 0
 - Hold Step Size: 0
 - Hold Step Time: 0.00 s
 - Hold Period: 0.00 s
 - Active Threshold: 0
- Counter #3:**
 - Increment Signal: None Selected
 - Decrement Signal: None Selected
 - Press Step Size: 0
 - Hold Step Size: 0

At the bottom of the window, there are six buttons: 'Load Config From File...', 'Save Config To File...', 'Restore Factory Defaults', 'Get Config From Device', 'Put Config To Device', and 'Close'. Below these buttons, a red text note states: 'RED text indicates a changed parameter that has not yet been put to the device'.

Figure 39 – CLMD16 Counter Tab

Increment Signal

This parameter allows you to select a signal to cause the counter to increment in value. You may choose a signal from the Available Input Signals list in Section 5.7.

Decrement Signal

This parameter allows you to select a signal to cause the counter to decrement in value. You may choose a signal from the Available Input Signals list in Section 5.7.

Reset Signal

This parameter allows you to select a signal to cause the counter to reset its value to the value in the *MinSetPoint* parameter. You may choose a signal from the Available Input Signals list in Section 5.7.

Counter Type

This parameter allows you to configure the operating mode of the counter. Each counter may be configured in one of the following modes:

- *Active High* – the counter increments or decrements as long as the increment or decrement input signal is in a high state
- *Active Low* – the counter increments or decrements as long as the increment or decrement input signal is in a low state
- *Rising Edge* – the counter increments or decrements once for every rising edge detected on the increment or decrement input signal
- *Falling Edge* – the counter increments or decrements once for every falling edge detected on the increment or decrement input signal
- *Change* – the counter increments or decrements once for every rising or falling edge detected on the increment or decrement input signal
- *One Button Smooth Scroll* – the counter increments as long as the increment input signal is in a high state until it reaches the Max Set Point value. Then, the counter decrements as long as the increment input signal is in a high state until it reaches the Min Set Point value. The decrement input signal is ignored.

Min Set Point

This parameter allows you to configure the value to which the counter is set when the Reset input is asserted high.

Max Set Point

This parameter allows you to configure the maximum value that the counter can reach.

Press Step Size

This parameter allows you to configure the step size by which to increment or decrement the counter when the increment or decrement input is pressed.

Hold Step Size

This parameter allows you to configure in Active High or Active Low mode, the value by which to increment or decrement the counter after the increment or decrement input signal has been asserted high for *HoldPeriods* time, and every *HeldStepTime* thereafter. If the Rising Edge, Falling Edge, or Change mode is selected, this is the value by which to increment or decrement the counter on each detected edge of the increment or decrement input signal.

Hold Periods

This parameter allows you to configure, in *Active High* or *Active Low* mode, the time after which the input signal is considered “held” if it remains active.

Active Threshold

This parameter allows you to configure the counter value above which the *CounterActive* output of the counter will be asserted high.

5.7.5 Flash Tab

The CLMD16 has sixteen flash elements.

General | Control | Alarm | Advanced | Counter | **Flash** | Grouping | Inputs | Tanks | Latch | LoadShedding | Logic

Flash Output #1
 On Period: **3.0** s Number Of Cycles: 0
 Off Period: **2.0** s Enable Signal: **Input 1 Low**

Flash Output #2
 On Period: 0.1 s Number Of Cycles: 0
 Off Period: 0.1 s Enable Signal: None Selected

Flash Output #3
 On Period: 0.1 s Number Of Cycles: 0
 Off Period: 0.1 s Enable Signal: None Selected

Flash Output #4
 On Period: 0.1 s Number Of Cycles: 0
 Off Period: 0.1 s Enable Signal: None Selected

Flash Output #5
 On Period: 0.1 s Number Of Cycles: 0
 Off Period: 0.1 s Enable Signal: None Selected

Load Config From File... Save Config To File... Restore Factory Defaults
 Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 40 – CLMD16 Flash Tab

On Period

This parameter allows you to configure the time period during which the **Flash Output** signal will be asserted high for each flash cycle.

Off Period

This parameter allows you to configure the time period during which the **Flash Output** signal will be asserted low for each flash cycle.

Number of Cycles

This parameter allows you to configure the number of cycles that the Flash element will run once the input signal is asserted high. If the flash input is asserted low before this number of cycles has been run, then the **Flash Output** signal will stop changing after the next time it is asserted low.

Enable Signal

This parameter allows you to configure which internal signal will enable the flashing function as long as this signal is asserted high. You may choose a signal from the Available Input Signals list in Section 5.7.

5.7.6 Grouping Tab

Various combinations of the breakers in the CLMD16 can be paralleled together to enable the paralleled breakers to handle higher currents than a single breaker can handle.

The screenshot shows the 'Grouping' tab of the CLMD16 configuration software. At the top is a navigation bar with tabs: General, Control, Alarm, Advanced, Counter, Flash, Grouping (selected), Inputs, Tanks, Latch, LoadShedding, and Logic. Below the navigation bar is a 'Channel Grouping' section with four dropdown menus labeled Group 1, Group 2, Group 3, and Group 4. Group 1 is set to '1 & 2' (blue text), Group 2 to '3 & 4' (red text), Group 3 to '7 & 8' (red text), and Group 4 to '13 & 14' (red text). Below these are six buttons: 'Load Config From File...', 'Save Config To File...', 'Restore Factory Defaults', 'Get Config From Device', 'Put Config To Device', and 'Close'. At the bottom, a red text note states: 'RED text indicates a changed parameter that has not yet been put to the device'.

Group	Configuration
Group 1:	1 & 2
Group 2:	3 & 4
Group 3:	7 & 8
Group 4:	13 & 14

Buttons: Load Config From File..., Save Config To File..., Restore Factory Defaults, Get Config From Device, Put Config To Device, Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 41 – CLMD16 Grouping Tab

Group 1

This parameter allows to configure which breakers in the first group of four breakers to operate in parallel. You may choose from the following:

- No Parallel Outputs – All four breakers operate independently.
- 1 & 2 – Breakers 1 and 2 operate in parallel, while breakers 11 and 12 operate independently.

Group 2

This parameter allows to configure which breakers in the second group of four breakers to operate in parallel. You may choose from the following:

- No Parallel Outputs – All four breakers operate independently.
- 3 & 4 – Breakers 3 and 4 operate in parallel, while breakers 5 and 6 operate independently.

Group 3

This parameter allows to configure which breakers in the third group of four breakers to operate in parallel. You may choose from the following:

- No Parallel Outputs – All four breakers operate independently.
- 7 & 8 – Breakers 7 and 8 operate in parallel, while breakers 9 and 10 operate independently.

Group 4

This parameter allows to configure which breakers in the fourth group of four breakers to operate in parallel. You may choose from the following:

- No Parallel Outputs – All four breakers operate independently.
- 13 & 14 – Breakers 13 and 14 operate in parallel, while breakers 15 and 16 operate independently.

5.7.7 Inputs Tab

This tab allows you to configure the operation of the analog/digital input signals.

General | Control | Alarm | Advanced | Counter | Flash | Grouping | Inputs | Tanks | Latch | LoadShedding | Logic

Input 1 (Channel/Indicator 17)

Label : High Water Alarm OnLevel(s): High Analog Reference: Supply

State: FLOAT Voltage: 4.359000 V

Input Thresholds Configuration

High Level

Threshold: 9.000 V Hysteresis: 0.500 V

Low Level

Threshold: 2.000 V Hysteresis: 0.500 V

Input 2 (Channel/Indicator 18)

Label : Bilge Blowers OnLevel(s): High Analog Reference: Supply

State: FLOAT Voltage: 4.325000 V

Input Thresholds Configuration

High Level

Threshold: 9.000 V Hysteresis: 0.500 V

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 42 – CLMD16 Inputs Tab (Channels 1-2)

The screenshot displays the 'Inputs' tab in the N2KAnalyzer V3 software. It shows two input channels, Input 10 and Input 11, each with a configuration panel. Input 10 is a 250 Ohm Resistive input, and Input 11 is a 4-20mA Current Loop input. Both inputs have a 'Label' field, an 'OnLevel(s)' dropdown, and an 'Input Thresholds Configuration' section with 'High Level' and 'Low Level' settings. The 'State' and 'Resistance' (for Input 10) or 'Current' (for Input 11) are displayed. At the bottom, there are buttons for 'Load Config From File...', 'Save Config To File...', 'Restore Factory Defaults', 'Get Config From Device', 'Put Config To Device', and 'Close'. A red text note at the bottom states: 'RED text indicates a changed parameter that has not yet been put to the device'.

General | Control | Alarm | Advanced | Counter | Flash | Grouping | Inputs | Tanks | Latch | LoadShedding | Logic

Input 10 (Channel/Indicator 26, 250 Ohm Resistive)

Label: **Fuel** OnLevel(s): **Low**

State: **LOW**

Resistance: **11.400000** Ohms

Input Thresholds Configuration

High Level

Threshold: **230** Ohms

Hysteresis: **0.5** Ohms

Low Level

Threshold: **33** Ohms

Hysteresis: **0.5** Ohms

Input 11 (Channel/Indicator 27, 4-20mA Current Loop)

Label: **Water Pressure Sensor** OnLevel(s): **High**

State: **LOW**

Current: **0.000000** mA

Input Thresholds Configuration

High Level

Threshold: **15** mA

Hysteresis: **1** mA

Low Level

Threshold: **2** mA

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 43 – CLMD16 Inputs Tab (Channels 10-11)

Label

This text box allows you to configure a text label for the input signal to identify it (for example, "RUNNING LIGHTS" or "HATCH"). For each input signal, set this to a value which describes the input signal so that you can easily identify it in display devices.

OnLevel(s)

This field allows you to select the input signal level that causes the corresponding field in the 127501 Binary Status Report message to be asserted high. You may select from one of the following values:

- LOW (the digital input signal being detected LOW will cause the corresponding field in the 127501 Binary Status Report message to be asserted HIGH).

- HIGH (the digital input signal being detected HIGH will cause the corresponding field in the 127501 Binary Status Report message to be asserted HIGH.

State

This read-only field reflects the current state of the corresponding binary input signal. This field will take one of the following three values:

- LOW – the input signal voltage is between 0 V and the Low Threshold
- FLOAT – the input signal voltage is between the Low Threshold and the High Threshold
- HIGH – the input signal voltage is between the High Threshold and the Supply Voltage

Voltage/Resistance/Current

This read-only field reflects the current measured voltage (for channels 1-8), resistance (for channels 9-10), or current (channel 11).

High Threshold

This numeric field allows you to program a voltage, resistance, or current value such that when the detected value on the input signal transitions from below this value to above this value, the state of the signal shall change from FLOAT to HIGH.

High Hysteresis

This numeric field allows you to program a hysteresis voltage, resistance, or current value such that when the detected value on the corresponding input signal transitions from above the High Threshold minus this value, the state of the output signal shall change from HIGH to FLOAT.

Low Threshold

This numeric field allows you to program a voltage, resistance, or current value such that when the detected value on the input signal transitions from below this value to above this value, the state of the signal shall change from LOW to FLOAT.

Low Hysteresis

This numeric field allows you to program a hysteresis voltage, resistance, or current value such that when the detected voltage on the corresponding input signal transitions from above the Low Threshold plus this value, the state of the output signal shall change from FLOAT to LOW.

5.7.8 Tanks Tab

This tab contains parameters for configuring tank measurement via the two resistive channels and the current loop channel.

General | Control | Alarm | Advanced | Counter | Flash | Grouping | Inputs | Tanks | Latch | LoadShedding | Logic

Input 9 (1 kOhm Resistive Channel)

☒ Enable Label : Fresh Water

Tank Capacity : 60 Gal Tank Type : Fresh Water

Tank Number : 0 Data Damping Period : 0.0 sec Tank Levels Calibration

Realtime Resistance : Ohms Realtime Level :

Input 10 (250 Ohm Resistive Channel)

☒ Enable Label : Fuel

Tank Capacity : 600 Gal Tank Type : Fuel

Tank Number : 0 Data Damping Period : 0.0 sec Tank Levels Calibration

Realtime Resistance : Ohms Realtime Level :

Input 11 (4-20mA Current Loop)

☐ Enable Label :

Pressure at 4mA : 0.0 PSI Tank Capacity : 0.0 Gal Tank Type : Fuel

Pressure at 20mA : 0.0 PSI Tank Number : 0 Data Damping Period : 0.0 sec Tank Levels Calibration

Realtime Current : mA Realtime Level :

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 44 – CLMD16 Tanks Tab

Enable

Each resistive/current loop measurement tool can be enabled or disabled. If this box is checked, the tank level corresponding to this channel will be transmitted. If this box is unchecked, no tank level will be reported for the channel.

If the channel is disabled, no further configuration is required. The following sections describe in detail the configuration of the current loop measurement channel when it is enabled.

Label

Program this parameter with a text string which identifies the parameter being monitored by this channel. Maretron display products will display this label text when you are selecting data to display.

Pressure at 4mA (Current Loop channel only)

Program this parameter to match the pressure reading of the current loop pressure transducer when it is sourcing a current of 4mA. You can determine this value by examining the specification of the pressure transducer being used.

Pressure at 20mA (Current Loop channel only)

Program this parameter to match the pressure reading of the current loop pressure transducer when it is sourcing a current of 20mA. You can determine this value by examining the specification of the pressure transducer being used.

Tank Capacity

In addition to indicating the fluid level within a tank, the channel also can be configured or programmed with the attached tank's capacity. This way, you will be able to view the tank's capacity as well as the amount of liquid remaining anywhere on the vessel where there is an NMEA 2000 compatible display.

Tank Number

As shipped from the factory, the channel transmits the Tank Number as "0". The channel supports up to sixteen tanks (0 through 15) for a given type of tank, which means you can monitor up to 16 separate fuel tanks or 16 separate fresh water tanks.

Tank Type

As shipped from the factory, the channel transmits the tank type as "Fuel". You can reconfigure the channel for any of these tank types:

- Fuel
- Fresh Water
- Waste Water
- Live Well
- Oil
- Black Water
- Reserved-1 through Reserved-7 (if none of the above types apply)

Data Damping Period

You can configure a damping parameter to smooth the tank level or pressure/vacuum readings or make them more responsive. The data damping is configurable between 0.2 – 25.0 seconds. The default data damping for a channel is 15.0 seconds.

Realtime Resistance (Resistive Channels Only)

This read-only field shows the resistance currently being measured on the applicable resistive input signal.

Realtime Current (Current Loop Channel Only)

This read-only field shows the current being measured on the current loop input signal.

Tank Levels Calibration

Pressing this button opens the Tank Calibration dialog, which is shown below. There are two methods of calibration: Manual Table and Step Fill Table

Manual Table

Using the manual table method, you enter each entry of the measured parameter (resistance for the resistance channels or depth for the current loop channel) and the level of fluid in the tank. The table may have as few as 2 entries (for a tank with rectangular cross-section) or as many as 16 entries (for a tank with a complex cross-section).

CLMD16 (0x00) 1540225 - Tank Calibration

Manual Table | Step Fill

Current Tank Calibration

	Resistance	Level (%)	Volume (Gal)
1	240.0	0.00	0.0
2	33.0	100.00	100.0
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-
11	-	-	-
12	-	-	-
13	-	-	-
14	-	-	-
15	-	-	-
16	-	-	-

Set to American Standard (240-33 ohm)

Set to European Standard (10-180 ohm)

Meas. Resistance (Ohms):

38

Number of Table Entries: 2

Load Config From File... Save Config To File...

Get Config From Device Put Config To Device

Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 45 – CLMD16 Resistive Tank Calibration Manual Table Window

Fluid Density

For the current loop channel, to convert the pressure measured into the height of a column of fluid, the channel must know the density of the fluid being measured. This control allows you to program the channel with the proper fluid density. You may choose from Diesel Fuel 20, Diesel Fuel 60, Fresh Water, or you may enter a different numeric density value appropriate to the fluid whose depth is being measured.

Number of Table Entries

You may choose the number of entries to be in the calibration table. Two is sufficient for a tank with a rectangular cross-section. The channel supports up to 16 table entries for supporting tanks with more complex cross-sections.

Current Tank Calibration

This grid shows the values of the tank calibration table. Each line of the grid has two entries:

For the two resistance channels:

- 1) Resistance – this is the resistance value of the level sender
- 2) Level (%) – this is the percent full the tank is at the specified resistance

- 3) Tank Depth – this is the height of the fluid above the pressure sensor port
- 4) Level (%) – this is the percent full the tank is at the specified tank depth

Step Fill Table

In the Step Fill Table method, you start with an empty tank, and then fill the tank with fluid, stopping at intermediate points to enter the amount of fluid put into the tank thus far, ending once the tank is full. You may enter between two and sixteen calibration points.

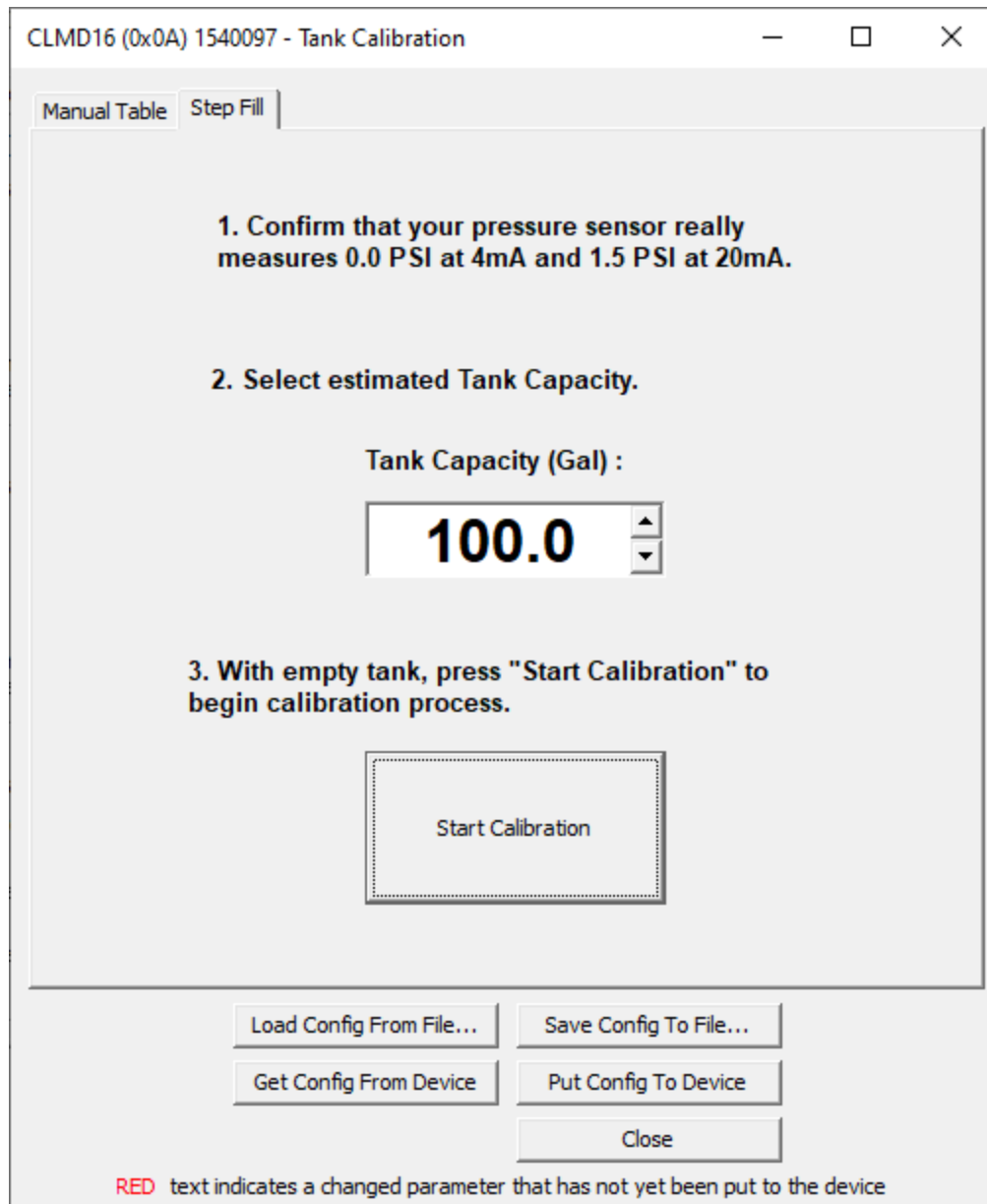


Figure 46 – CLMD16 Current Loop Step Fill Calibration Initial Window

To use this method, use the following steps:

- 1) Enter the estimated total capacity of the tank into the "Total Capacity" text box.
- 2) Press the "Start Calibration" button. You will now see the Step Fill Calibration window displayed, as shown below.

Tank Calibration - Step Fill Calibration
✕

Current Tank Calibration

Entry	Depth (")	Level (%)	Volume (Gal)	Current
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-

Tank Capacity (Gal) :

100.0

Measured Current (mA):

4.0

Current Level (Gal) :

0.0

Step 1 of 16

Complete

Abort

Figure 47 – CLMD16 Current Loop Step Fill Calibration Initial Window

- 3) Enter "0" into the Current Level text box, and press "Step". You have now entered the first point of the table.
- 4) Partially fill the tank. Enter the amount of fluid pumped into the tank into the "Current Level" text box, and press "Step" (if you make a mistake entering a level, you can press "Back" and re-enter the level. If you want to cancel the process, press the "Abort" button).
- 5) Repeat the previous step until the tank is completely filled.

Once you have entered the last point, where the tank is 100% full, press "Complete". This will cause the table to be stored in the device.

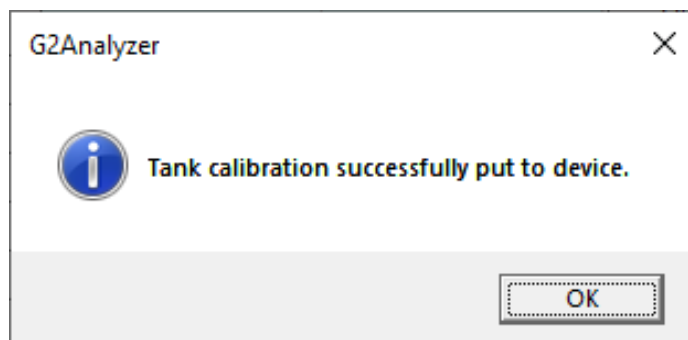


Figure 48 – CLMD16 Current Loop Tank Fill Confirmation Dialog Box

5.7.9 Latch Tab

The CLMD16 provides sixteen latches for use in the development of switching applications. Each latch element consists of a single SET-RESET latch.

General | Control | Alarm | Advanced | Counter | Flash | Grouping | Inputs | Tanks | Latch | LoadShedding | Logic

Latch Output #1
Set Signal: **Input 1 High** Reset Signal: **Input 1 Float**

Latch Output #2
Set Signal: None Selected Reset Signal: None Selected

Latch Output #3
Set Signal: None Selected Reset Signal: None Selected

Latch Output #4
Set Signal: None Selected Reset Signal: None Selected

Latch Output #5
Set Signal: None Selected Reset Signal: None Selected

Latch Output #6
Set Signal: None Selected Reset Signal: None Selected

Latch Output #7
Set Signal: None Selected Reset Signal: None Selected

Load Config From File... Save Config To File... Restore Factory Defaults
Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 49 – CLMD16 Latch Tab

Set Signal

This parameter allows you to select the internal signal to be connected to the SET input of the latch element. You may choose a signal from the Available Input Signals list in Section 5.7.

Reset Signal

This parameter allows you to select the internal signal to be connected to the RESET input of the latch element. You may choose a signal from the Available Input Signals list in Section 5.7.

5.7.10 Load Shedding Tab

The CLMD16 implements load shedding, which allows specified loads to be turned off when the DC supply voltage drops below programmed levels.

General | Control | Alarm | Advanced | Counter | Flash | Grouping | Inputs | Tanks | Latch | LoadShedding | Logic

Load Shedding

Channel 1 Priority: HIGH

Channel 2 Priority: MEDIUM

Channel 3 Priority: MEDIUM

Channel 4 Priority: MEDIUM

Channel 5 Priority: LOW

Channel 6 Priority: LOW

Channel 7 Priority: LOW

Channel 8 Priority: LOW

Channel 9 Priority: HIGH

Channel 10 Priority: HIGH

Channel 11 Priority: HIGH

Channel 12 Priority: HIGH

Channel 13 Priority: HIGH

Channel 14 Priority: HIGH

Channel 15 Priority: HIGH

Channel 16 Priority: HIGH

Supply Voltage Threshold Configuration

Medium Priority

Deactivate Loads Below: 9.0 V

Activate Loads Above: 10.0 V

Low Priority

Deactivate Loads Below: 11.0 V

Activate Loads Above: 12.0 V

Voltages above must follow these rules:

- Valid voltage range 7VDC to 32VDC
- Low Priority Activate > Low Priority Deactivate
- Low Priority Activate > Medium Priority Activate
- Low Priority Deactivate > Medium Priority Deactivate
- Medium Priority Activate > Medium Priority Deactivate

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 50 – CLMD16 Load Shedding Dialog

Channel x Priority

This programmable parameter allows you to specify the priority level of the breaker channel. You may select from one of the following values:

- HIGH – channels with this priority are never turned off
- MEDIUM
- LOW

Medium Priority Deactivate Loads Below

This programmable parameter allows you to specify a voltage value such that when the DC supply voltage drops below this level, channels with MEDIUM priority will be disabled.

Medium Priority Activate Loads Above

This programmable parameter allows you to specify a voltage value such that when the DC supply voltage rises above this level, channels with MEDIUM priority will be enabled.

Low Priority Deactivate Loads Below

This programmable parameter allows you to specify a voltage value such that when the DC supply voltage drops below this level, channels with LOW priority will be disabled.

Low Priority Active Loads Above

This programmable parameter allows you to specify a voltage value such that when the DC supply voltage rises above this level, channels with LOW priority will be enabled.

5.7.11 Logic Tab

The CLMD16 provides forty-eight logic elements for use in development of applications. Each logic element consists of a three-input lookup table, enabling any three-input Boolean logic function to be realized.

The dialog features a tabbed interface with the following tabs: Grouping, Inputs, Tanks, Latch, LoadShedding, **Logic**, Timer, Toggle, Discrete I/O, and Installation Description. The Logic tab is active, showing three sections for Logic Output #1, Logic Output #2, and Logic Output #3.

Logic Output #1

Input A:
 Input B:
 Input C:

A	B	C	Output
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

Logic Output #2

Input A:
 Input B:
 Input C:

A	B	C	Output
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

Logic Output #3

A	B	C	Output
0	0	0	1

Buttons: Load Config From File..., Save Config To File..., Restore Factory Defaults, Get Config From Device, Put Config To Device, Close.

RED text indicates a changed parameter that has not yet been put to the device

Figure 51 – CLMD16 Logic Dialog

Input A

This signal is connected to the first input of the lookup table for this logic element. You may choose a signal from the Available Input Signals list in Section 5.7.

Input B

This signal is connected to the second input of the lookup table for this logic element. You may choose a signal from the Available Input Signals list in Section 5.7.

Input C

This signal is connected to the third input of the AND gate for this logic element. You may choose a signal from the Available Input Signals list in Section 5.7.

Lookup Table

The lookup table consists of eight rows, one for each possible combination of values for the three input signals. Set the value in the *Output* row of the table to the desired output signal value corresponding to the A, B, and C signal values for that row.

5.7.12 Timer Tab

The CLMD16 provides sixteen timer elements for use in constructing switching applications.

Grouping | Inputs | Tanks | Latch | LoadShedding | Logic | **Timer** | Toggle | Discrete I/O | Installation Description

Timer Output #1
 Delay Signal: **Input 1 High** Delay Time: **1** s
 Delay Type: **ON Delay**

Timer Output #2
 Delay Signal: **Input 2 High** Delay Time: **3** s
 Delay Type: **ON Delay**

Timer Output #3
 Delay Signal: **None Selected** Delay Time: **0** s
 Delay Type: **No Delay**

Timer Output #4
 Delay Signal: **None Selected** Delay Time: **0** s
 Delay Type: **No Delay**

Timer Output #5
 Delay Signal: **None Selected** Delay Time: **0** s
 Delay Type: **No Delay**

Timer Output #6
 Delay Signal: **None Selected** Delay Time: **0** s
 Delay Type: **No Delay**

Load Config From File... Save Config To File... Restore Factory Defaults
 Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 52 – CLMD16 Timer Dialog

Delay Signal

This parameter allows you to select the internal signal to connect to the input of the timer element. You may choose a signal from the Available Input Signals list in Section 5.7.

Delay Type

This parameter allows you to select the type of delay implemented by this timer function. You may select from one of the following choices:

- No Delay – the input signal is passed through to the output signal with no delay introduced.
- OFF Delay – the input signal is passed through to the output signal with ON to OFF transitions delayed by the time specified by the Delay Time parameter.
- ON Delay – the input signal is passed through to the output signal with OFF to ON transitions delayed by the time specified by the Delay Time parameter.

Delay Time

This parameter allows you to select the amount of time by which to delay the appropriate edges of the input signal to produce the output signal.

5.7.13 Toggle Tab

The CLMD16 provides sixteen toggle flip-flop elements for use in developing switching applications.

Grouping | Inputs | Tanks | Latch | LoadShedding | Logic | Timer | **Toggle** | Discrete I/O | Installation Description

Toggle Signal #1
Toggle Signal: Logic Output 1

Toggle Signal #2
Toggle Signal: Logic Output 2

Toggle Signal #3
Toggle Signal: Input 2 Low

Toggle Signal #4
Toggle Signal: Logic Output 5

Toggle Signal #5
Toggle Signal: Logic Output 6

Toggle Signal #6
Toggle Signal: None Selected

Toggle Signal #7
Toggle Signal: None Selected

Toggle Signal #8
Toggle Signal: None Selected

Toggle Signal #9
Toggle Signal: None Selected

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 53 – CLMD16 Toggle Tab

Toggle Signal

This parameter allows you to select the internal signal to connect to the input of the timer element. You may choose a signal from the Available Input Signals list in Section 5.7.

5.7.14 Discrete I/O Tab

Grouping | Inputs | Tanks | Latch | LoadShedding | Logic | Timer | Toggle | Discrete I/O | Installation Description

Discrete I/O #1
Data Instance: 50 Indicator: 1

Discrete I/O #2
Data Instance: 50 Indicator: 3

Discrete I/O #3
Data Instance: 50 Indicator: 7

Discrete I/O #4
Data Instance: 50 Indicator: 5

Discrete I/O #5
Data Instance: 50 Indicator: 9

Discrete I/O #6
Data Instance: 52 Indicator: 3

Discrete I/O #7
Data Instance: 51 Indicator: 1

Discrete I/O #8

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 54 – CLMD16 Discrete I/O Tab

Discrete I/O #n

When a device transmitting the 127501 Binary Status Report message is part of the installation, it can be configured to create an input signal for the CLMD16. Up to thirty-two Discrete I/O signals can be programmed.

Data Instance

This parameter allows you to configure the data instance of the 127501 Binary Status Report message that will be used to create this discrete I/O signals. To assign a discrete input from this device to this discrete I/O signal, enter the instance value assign to this device (the value of the "Instance" field on the "General" tab).

Indicator

This parameter allows you to configure the indicator number within the 127501 Binary Status Report status message whose instance field matches the “Data Instance” parameter for this channel that will be used to create this discrete I/O signal.

5.7.15 Advanced Tab

The Advanced tab is used to configure and observe parameters that do not normally require changing.

The screenshot displays the 'Advanced' tab of the CLMD16 configuration interface. At the top, a series of tabs includes General, Control, Alarm, Advanced (selected), Counter, Flash, Grouping, Inputs, Tanks, Latch, LoadShedding, and Logic. Below the tabs, three input fields are shown: 'Device Instance' with a value of 32, 'Location Address' with a value of 0, and 'Model Version' with a value of 14607. The main content area is divided into three sections: 'Temperatures', 'Supply Voltage', and 'Runtime Metrics'. The 'Temperatures' section contains six rows of temperature readings, each with two input fields (a and b) and a unit of °C. The 'Supply Voltage' section includes an 'Input Supply' field with a value of 12.975 V and two radio buttons for 'Over Voltage Fault' and 'Under Voltage Fault'. The 'Runtime Metrics' section contains three rows of time readings, each with an input field and a unit of ms. At the bottom, there are six buttons: 'Load Config From File...', 'Save Config To File...', 'Restore Factory Defaults', 'Get Config From Device', 'Put Config To Device', and 'Close'. A red text note at the bottom states: 'RED text indicates a changed parameter that has not yet been put to the device'.

Figure 55 – CLMD16 Advanced Tab (Upper Portion)

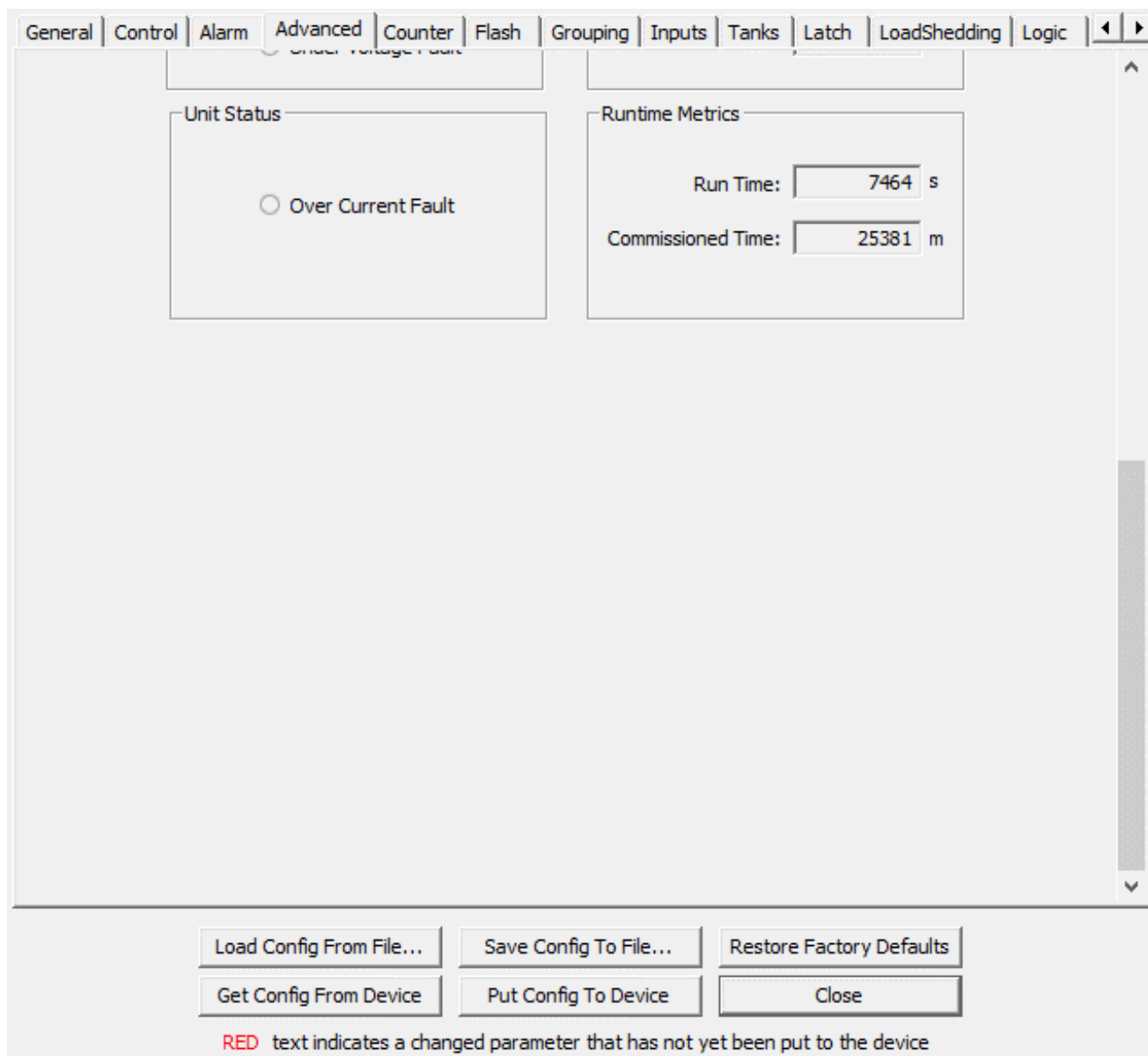


Figure 56 – CLMD16 Advanced Tab (Lower Portion)

Device Instance

This parameter allows you to configure the NMEA 2000 device instance used by the device. This value is also used as the data instance in the 127501 Binary Status Report messages transmitted by the device and can be seen on the General Tab as well as the Inputs Tab labeled as "Instance".

Location Address

This read-only field displays the value of the four active-low Address #1 through Address #4 inputs. Address #4 is the most significant bit, and Address #1 is the least significant bit.

Model Version

This read-only field shows the internal version number of the CLMD16 application software.

Temperatures:

Temp 12A Group 1

These two read-only fields (a and b) display the temperature measured by the two temperature sensors in the CLMD16 located near the 12 Amp Group 1 channels.

Temp 12A Group 2

These two read-only fields (a and b) display the temperature measured by the two temperature sensors in the CLMD16 located near the 12 Amp Group 2 channels.

Temp 12A Group 3

These two read-only fields (a and b) display the temperature measured by the two temperature sensors in the CLMD16 located near the 12 Amp Group 3 channels.

Temp 25A Group

These four read-only fields (a, b, c, and d) display the temperature measured by the four temperature sensors in the CLMD16 located near the 25 Amp Group channels.

Temp MCU

These two read-only fields (a and b) display the temperature measured by the two temperature sensors in the CLMD16 located near the system microcontroller.

Supply Voltage:

Input Supply

This read-only field displays the voltage that is present on the DC Power Connection Stud with respect to the DC Ground Connection Stud.

Over Voltage Fault

This read-only indicator is lit red if the voltage between the DC Power Connection Stud and the DC Power Ground Stud is higher than the recommended operating range.

Under Voltage Fault

This read-only indicator is lit red if the voltage between the DC Power Connection Stud and the DC Power Ground Stud is lower than the recommended operating range.

Execution Time Metrics:

Max Time

This read-only field displays the longest loop time used by internal calculations.

Min Time

This read-only field displays the shortest loop time used by internal calculations.

Difference Time

This read-only field displays the average loop time used by internal calculations.

Unit Status:

Over Current Fault

This read-only indicator is lit red if the CLMD16 has been shut down because the total current through the CLMD16 is in excess of the 125 Amp specification.

Runtime Metrics:

Run Time

This read-only field displays the total amount of time the CLMD16 has been operational since it was last powered on.

Commissioned Time

This read-only field displays the total amount of the time the CLMD16 has been operational since it was built.

5.7.16 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

Grouping | Inputs | Tanks | Latch | LoadShedding | Logic | Timer | Toggle | Discrete I/O | **Installation Description** | ◀ ▶

Installation Description #1 : —

☒ ASCII (English language only, Max. 70 characters)
☐ Unicode (Max. 35 characters)

Main Cabin #1-32

Installation Description #2 : —

☒ ASCII (English language only, Max. 70 characters)
☐ Unicode (Max. 35 characters)

11-13-2020 Marine Service LTD; for Service Call: +1 (321) 555-5555

Manufacturer Information

Maretron 1-866-550-9100 www.maretron.com

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 57 – CLMD16 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry ‘*Installation Description*’ fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.8 DCM100

5.8.1 General Tab

This tab contains commonly-used configuration items.

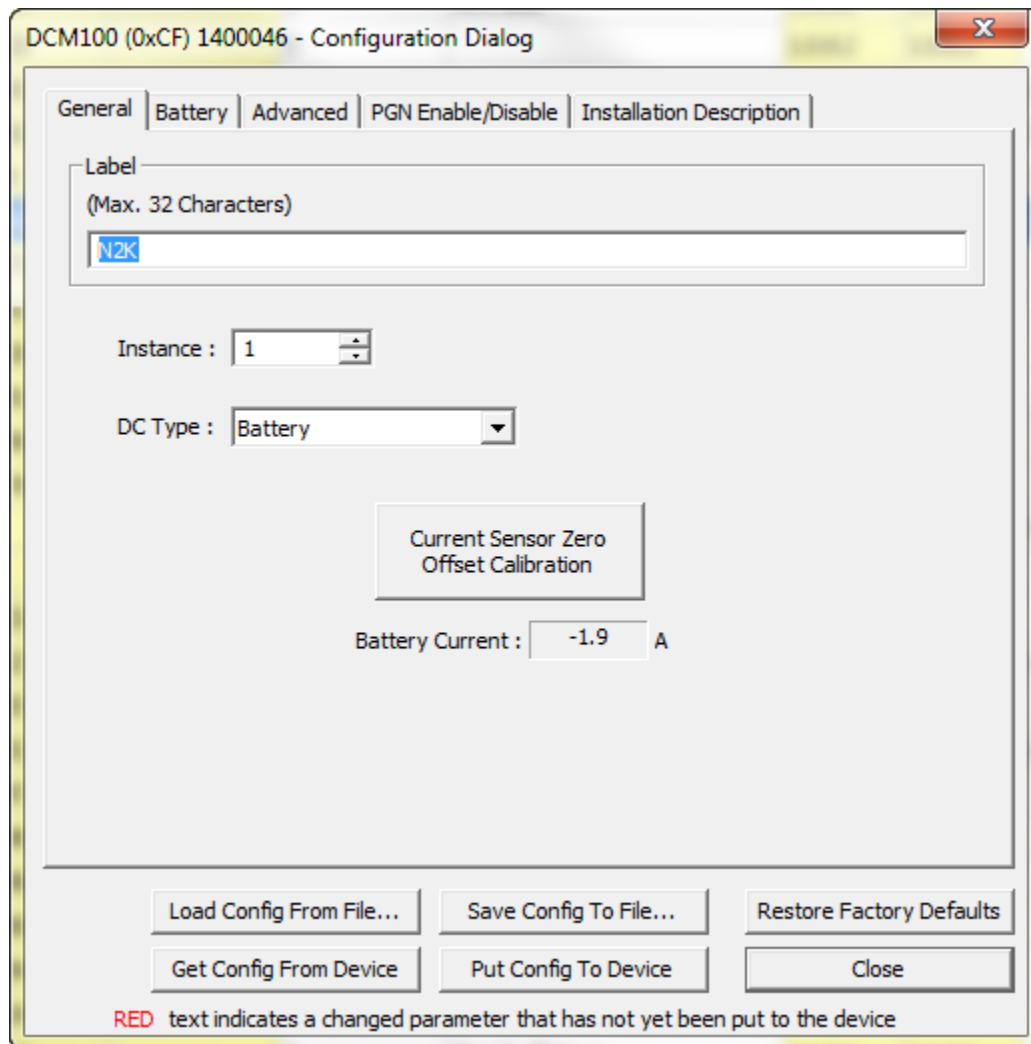


Figure 58 – DCM100 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Instance

NMEA 2000 provides a unique instance number for each DC power source on a vessel.

DC Type

You can configure the DCM100 as to what type of DC power source it is monitoring. Except for the "Battery" type, the value of this parameter is used only for reporting the power source type

over the NMEA 2000 network. However, if you select the “Battery” type, many battery-related options become available.

The following DC Types are selectable:

- Battery
- Alternator
- Converter
- Solar Cell
- Wind Generator

Current Sensor Zero Offset Calibration

The DCM100 is shipped with a Hall-effect current sensor. To match the DCM100 unit and the sensor to one another and ensure maximum accuracy, you should perform this calibration step while there is no current flowing through the current sensor.

Battery Current

This display-only field shows the current provided by the battery. If there is no current flowing through the current sensor, this field should read near zero after current sensor zero offset calibration is performed.

5.8.2 Battery Tab

This tab provides a means to program the DCM100 with characteristics of the battery being monitored.

Please note that this tab is only functional when “DC Type” is set to “Battery” in the General tab.

DCM100 (0xCF) 1400046 - Configuration Dialog

General Battery Advanced PGN Enable/Disable Installation Description

Battery Type : AGM Nominal Voltage : 12

Battery Capacity : 16959 AH Equalization : Not Supported

Temp. Coefficient : 0.5 % per °C Fully Charged Time > 5:00 mm:ss

Peukert Exponent : 1.00 Battery Temperature : Sensor C
☒ Sensor

Charge Efficiency Factor : 100 %
☐ Auto Time Remaining Floor : 50 %

Fully Charged Voltage > 12.17 V Time Remaining Avg. Period : 0:01 mm:ss

Fully Charged Current < 2.0 % Zero Current Threshold : 0.0 A

Manually Set Battery to 100%

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 59 – DCM100 Battery Tab

Battery Type

The available battery types are Flooded/Wet, Gel, AGM, Li-Ion, NiCad, NiMH, ZnO and Other. Selecting one of these types causes the remaining parameters to be set to appropriate default values.

Battery Capacity

Set this field to the value of the capacity of the battery in Amp-hours at 25°C.

Temperature Coefficient

The capacity of a battery generally increases with increasing temperature. So that the DCM100 can properly calculate the battery's state of charge, configure this parameter with the increase in battery capacity, in percent, per increase in temperature, in degrees Celsius. The temperature coefficient can be set to a value between 0%/°C – 5%/°C.

Peukert Exponent

The Peukert Exponent for the battery can be set to a value between 1.0 and 1.5. Please refer to the *DCM100 User's Manual* for details.

Charge Efficiency Factor

The Charge Efficiency Factor for the battery can be set to a value between 5% and 100%. Please refer to the *DCM100 User's Manual* for details.

Fully Charged Voltage

For the DCM100 to determine when a battery is fully charged, it uses three parameters. The "Fully Charged Voltage" indicates the value voltage at which the battery is considered fully charged if the battery voltage remains above this value and the battery current remains below the "Fully Charged Current" for the amount of time defined by the "Fully Charged Time" parameter.

Fully Charged Current

For the DCM100 to determine when a battery is fully charged, it uses three parameters. The "Fully Charged Voltage" indicates the value voltage at which the battery is considered fully charged if the battery voltage remains above this value and the battery current remains below the "Fully Charged Current" for the amount of time defined by the "Fully Charged Time" parameter.

Nominal Voltage

You may program here the nominal voltage of the battery, which is used only for reporting over the NMEA 2000 network. Available choices are 6, 12, 24, 32, 36, 42, and 48 Volts.

Equalization

You may indicate here whether the battery supports equalization. This is used only for reporting over the NMEA 2000 network. Available choices are "Supported" and "Not Supported".

Fully Charged Time

For the DCM100 to determine when a battery is fully charged, it uses three parameters. The "Fully Charged Voltage" indicates the value voltage at which the battery is considered fully charged if the battery voltage remains above this value and the battery current remains below the "Fully Charged Current" for the amount of time defined by the "Fully Charged Time" parameter.

Battery Temperature

For the DCM100 to properly determine battery capacity and state of charge, it must know the temperature of the battery. If you are using a TR3K temperature sensor attached to the battery, you should set this parameter to "Sensor". Otherwise, if no temperature sensor is available, you can set this parameter to the estimated battery temperature, between -25°C and 125°C.

Time Remaining Floor

The DCM100 calculates the time, given the current being discharged from the battery, before the battery becomes discharged. By default, the DCM100 considers a battery to be discharged when its state of charge reaches the “Time Remaining Floor” value, which is by default set to 50%. If you desire to use some other state of charge value for the “Time Remaining Floor”, you may change this parameter to the desired value.

Time Remaining Averaging Period

If loads on the battery are switching on and off frequently, the battery time remaining value calculated by the DCM100 can vary significantly. You may change the time over which current readings are averaged by changing this parameter anywhere in the range of 1 second to 32 minutes.

Zero Current Threshold

The current sensor reading can drift slightly at zero current, depending on temperature. Over a long period of time, this can cause the DCM100 to calculate that a battery is discharging slowly, even though it is not. The Zero Current Threshold parameter indicates a reading from the current sensor below which no current is considered to be flowing into or out of the battery.

Manually Set Battery to 100%

If you know that the battery is fully charged, press this button to immediately set the battery state of charge to 100%.

5.8.3 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

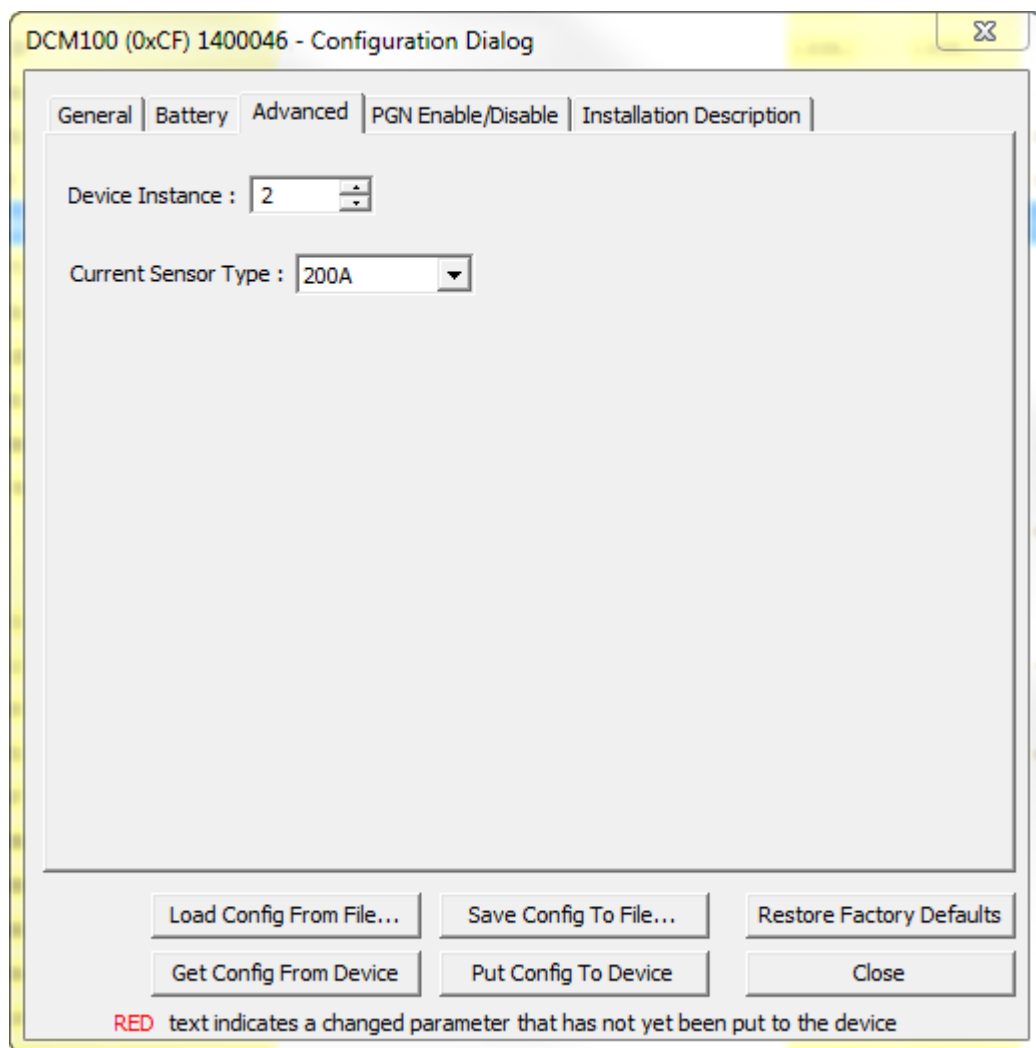


Figure 60 – DCM100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

Current Sensor Type

From the factory, the DCM100 is configured to use a 200A Hall Effect current sensor. If you are using a 400A or 600A current sensor, you should configure the DCM100 for the proper sensor type by selecting it in this field.

5.8.4 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the

time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

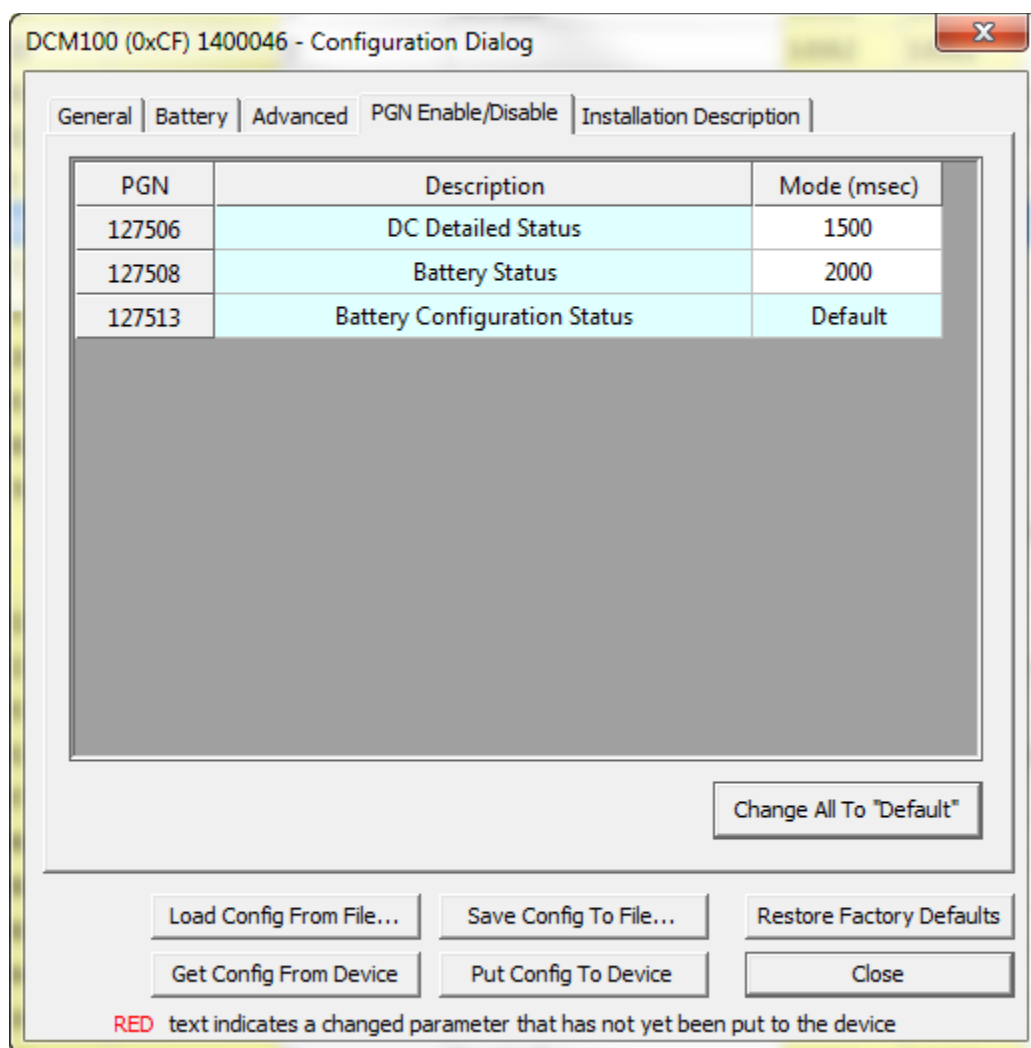


Figure 61 – DCM100 PGN Enable/Disable Tab

5.8.5 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

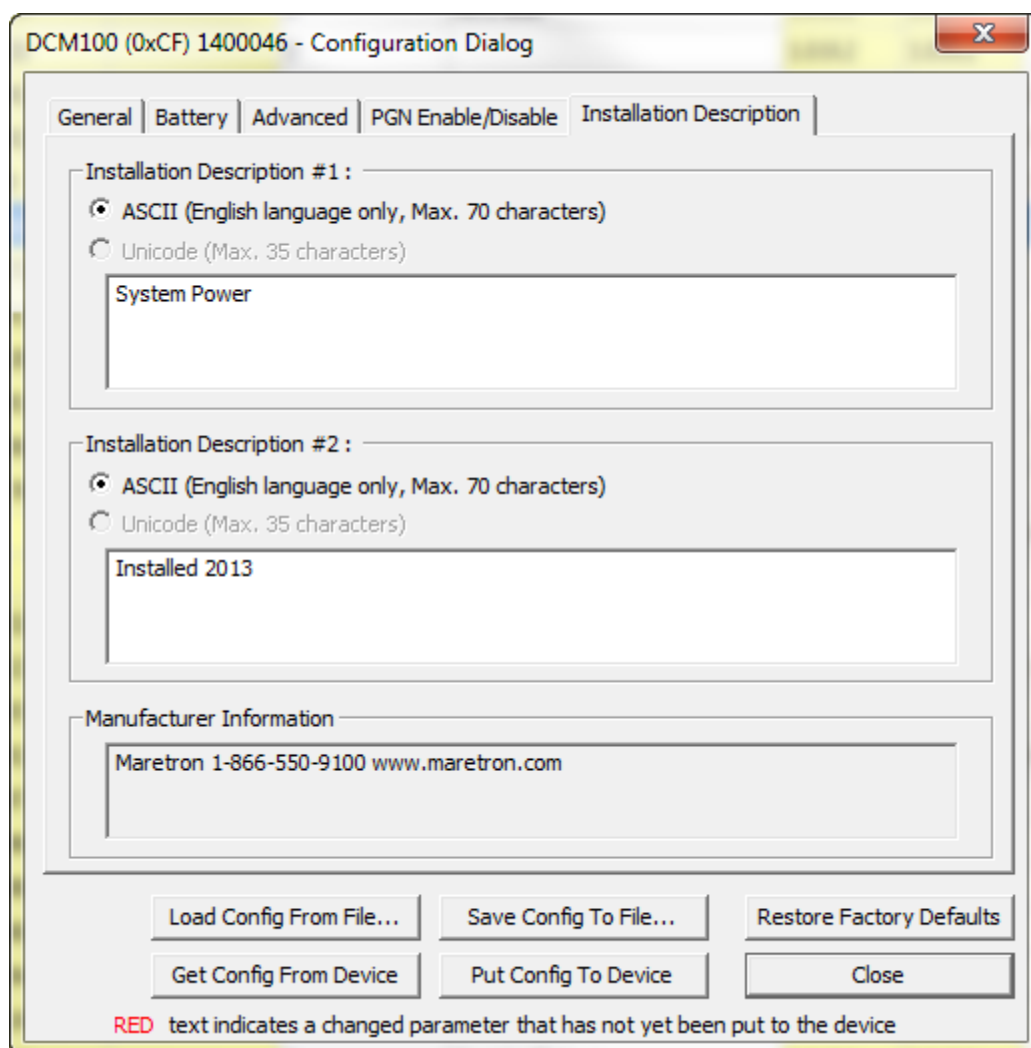


Figure 62 – DCM100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.9 DCR100

5.9.1 General Tab

This tab contains commonly-used configuration items.

DCR100 (0x4F) 1719999 - Configuration Dialog

General | Counters/Timers | Advanced | PGN Enable/Disable | Installation Description

Label
(Max. 32 Characters)
DCR-SW

Instance : 0

Channel #1
Label : BRK 1
Operating Mode : Normal
Switch Lock : Unlock
Power Up State : Previous
Switch Control : OFF
Annunciator Instance : 1 Test

Channel #2
Label : BRK 2
Operating Mode : Normal
Switch Lock : Unlock
Power Up State : Previous
Switch Control : OFF
Annunciator Instance : 2 Test

Channel #3
Label : BRK 3
Operating Mode : Normal
Switch Lock : Unlock
Power Up State : Previous
Switch Control : OFF
Annunciator Instance : 3 Test

Channel #4
Label : BRK 4
Operating Mode : Normal
Switch Lock : Unlock
Power Up State : Previous
Switch Control : OFF
Annunciator Instance : 4 Test

Channel #5
Label : BRK 5
Operating Mode : Normal
Switch Lock : Unlock
Power Up State : Previous
Switch Control : OFF
Annunciator Instance : 5 Test

Channel #6
Label : BRK 6
Operating Mode : Normal
Switch Lock : Unlock
Power Up State : Previous
Switch Control : OFF
Annunciator Instance : 6 Test

Load Config From File... Save Config To File... Restore Factory Defaults
Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 63 – DCR100 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Channel #x Label

Each channel has a text label you can set to identify the load controlled by that channel (for example, “EXHAUST FAN” or “NAV LIGHTS”). For each channel, set this to a value which describes the load being controlled so that you can easily identify it in display devices.

Channel #x Operating Mode

DCR100 channels have two operating modes: “Normal”, in which the DCR100 channel responds to standard NMEA 2000 switching commands, and “Annunciator”, in which the channel may be connected to a power source for a sounder or a light to be activated in the case of an alert generated by a DSM series display or by N2Kview software.

Channel #x Switch Lock

This menu allows you to view the lock status of each switch. When a switch is locked, it will not respond to the on and off commands transmitted over the NMEA 2000 network until it has been unlocked. This menu is disabled if the channel is set to “Annunciator Mode”.

Channel #x Power Up State

This menu allows you to configure the state of the switch when the DCR100 is first powered up. You may set the state to ON, OFF, or Previous State (the state of the switch when power was last applied to the DCR100). This menu is disabled if the channel is set to “Annunciator Mode”.

Channel #x Switch Control

This entry will show the current state of the relay channel, either “Off” (open) or “On” (closed). You may use this menu entry to turn the relay channel on or off.

Channel #x Annunciator Instance

This entry allows you to program the instance number for the channel in Annunciator Mode. You may use a value between 0 and 15. This instance number is used by the DSM series display or N2Kview when selecting annunciators to sound when programming an alert.

Channel #x Test

Press this button to verify functionality of the channel in Annunciator mode. This will cause the annunciator to sound or light briefly.

5.9.2 Counters/Timers Tab

This tab contains controls to view the state of and to reset the hardware counters and timers in the DCR100.

DCR100 (0x4F) 1719999 - Configuration Dialog

General | Counters/Timers | Advanced | PGN Enable/Disable | Installation Description

Channel #1

Counters

Since: 10-12-2015 18:40:37

OFF: 2

ON: 2

ERROR: 0

Reset

Timers

Since: 10-12-2015 18:40:35

OFF: 00:00:32

ON: 00:00:00

ERROR: 00:00:00

Reset

Channel #2

Counters

Since: 10-12-2015 18:40:38

OFF: 1

ON: 2

ERROR: 0

Reset

Timers

Since: 10-12-2015 18:40:39

OFF: 00:00:14

ON: 00:00:15

ERROR: 00:00:00

Reset

Channel #3

Counters

Since: 10-12-2015 18:40:40

OFF: 3

ON: 3

ERROR: 0

Reset

Timers

Since: 10-12-2015 18:40:40

OFF: 00:00:27

ON: 00:00:01

ERROR: 00:00:00

Reset

Channel #4

Counters

Since: 10-12-2015 18:40:45

OFF: 2

ON: 3

ERROR: 0

Reset

Timers

Since: 10-12-2015 18:40:46

OFF: 00:00:13

ON: 00:00:09

ERROR: 00:00:00

Reset

Channel #5

Counters

Since: 10-12-2015 18:40:44

OFF: 2

ON: 2

ERROR: 0

Reset

Timers

Since: 10-12-2015 18:40:44

OFF: 00:00:22

ON: 00:00:02

ERROR: 00:00:00

Reset

Channel #6

Counters

Since: 10-12-2015 18:40:42

OFF: 3

ON: 4

ERROR: 0

Reset

Timers

Since: 10-12-2015 18:40:43

OFF: 00:00:23

ON: 00:00:02

ERROR: 00:00:00

Reset

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 64 – DCR100 Counters/Timers Tab

Each channel of the DCR100 maintains counters that track how many times the channel has transitioned into each of the states OFF, ON, and ERROR. The “Counters” section of this dialog for each channel has the following fields:

- **Since:** the time and date that the channel’s counter was last reset (this requires that a source of time and date, usually a GPS receiver, be present on the NMEA 2000 network).
- **OFF:** the number of times that this channel has transitioned into the OFF state since the channel’s counters were last reset.
- **ON:** the number of times that this channel has transitioned into the ON state since the channel’s counters were last reset.
- **ERROR:** the number of times that this channel has transitioned into the ERROR state since the channel’s counters were last reset.
- **Reset:** Pressing this button will reset the OFF, ON, and ERROR counters to zero values, and will update the “Since:” field for this channel’s counters to the current time and date.

Each channel of the DCR100 maintains timers of the elapsed time that the channel has spent in each of the states OFF, ON, and ERROR. The “Timers” section of this dialog for each channel has the following fields:

- **Since:** the time and date that the channel’s timer was last reset (this requires that a source of time and date, usually a GPS receiver, be present on the NMEA 2000 network).
- **OFF:** the elapsed time that this channel has been in the OFF state since the channel’s timer were last reset.
- **ON:** the elapsed time that this channel has been in the ON state since the channel’s timers were last reset.
- **ERROR:** the elapsed time that this channel has been in the ERROR state since the channel’s timers were last reset.
- **Reset:** Pressing this button will reset the OFF, ON, and ERROR timers to zero values, and will update the “Since:” field for this channel’s timers to the current time and date.

5.9.3 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

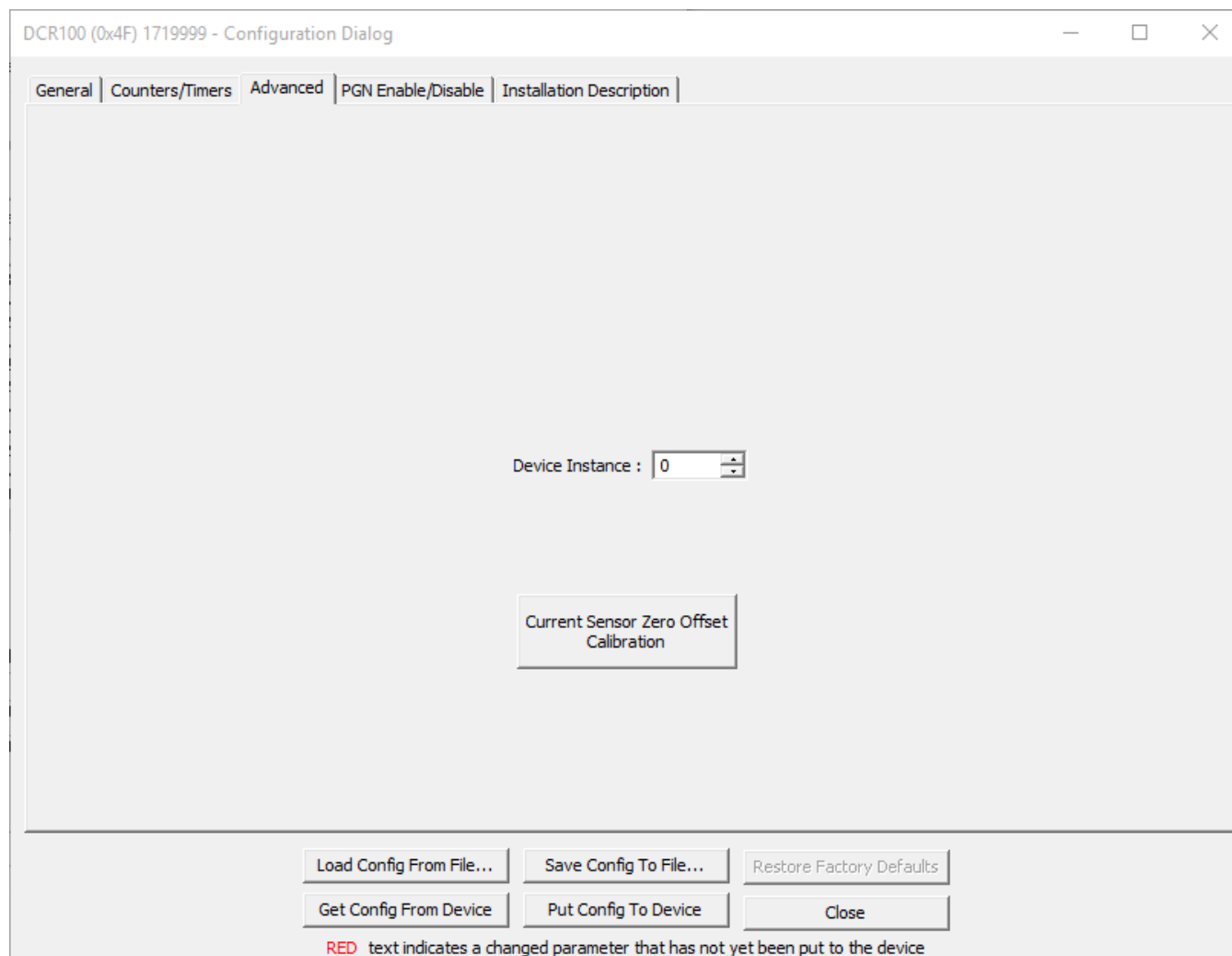


Figure 65 – DCR100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

Current Sensor Zero Offset Calibration

The DCR100 contains Hall-effect current sensors. Press this button to calibrate the zero-current reading of the sensors. To ensure maximum accuracy, you should perform this calibration step while there is no current flowing through the current sensors.

5.9.4 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

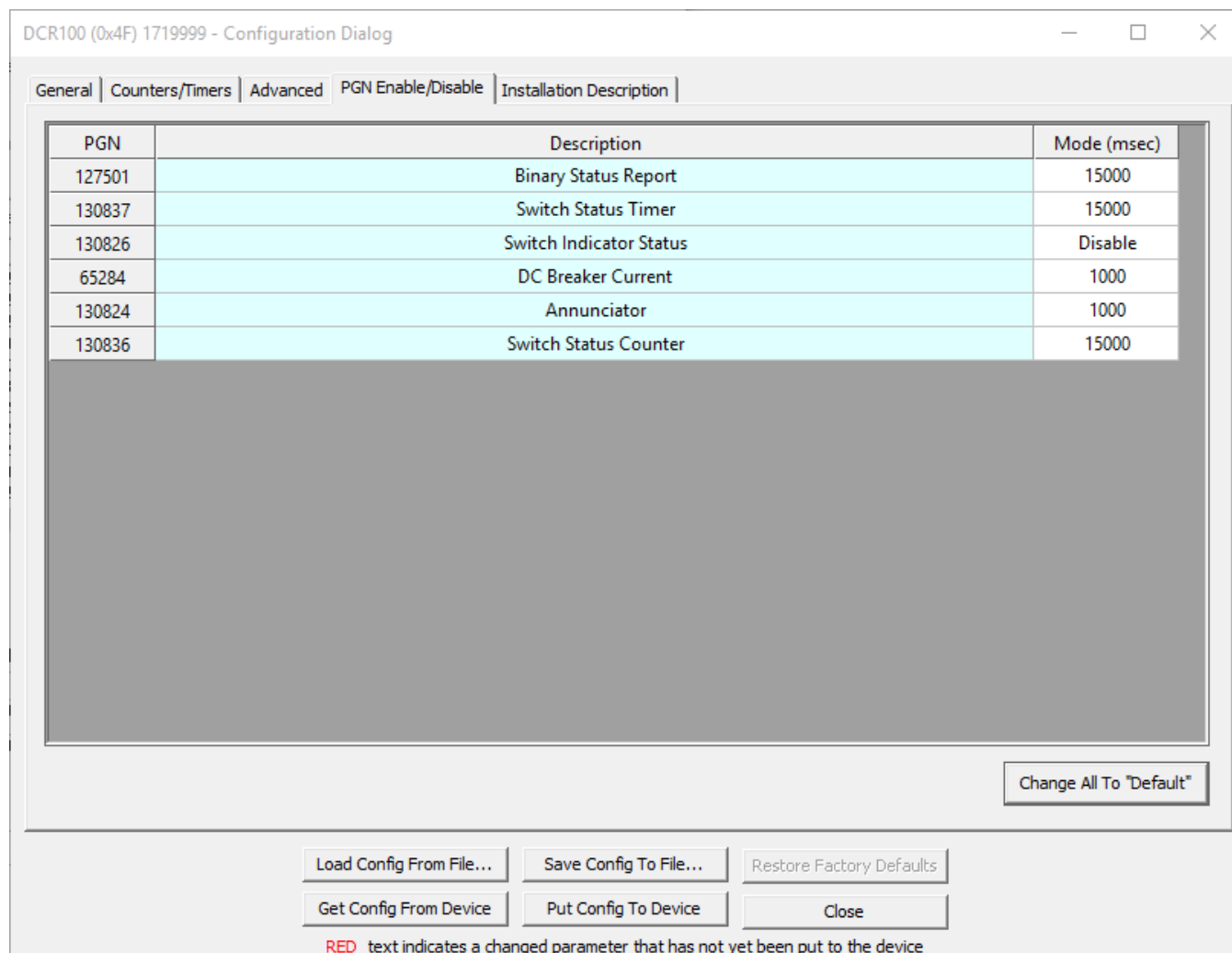


Figure 66 – DCR100 PGN Enable/Disable tab

5.9.5 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

DCR100 (0x4F) 1719999 - Configuration Dialog

General | Counters/Timers | Advanced | PGN Enable/Disable | **Installation Description**

Installation Description #1 :

☒ ASCII (English language only, Max. 70 characters)

☐ Unicode (Max. 35 characters)

Installation Description #2 :

☒ ASCII (English language only, Max. 70 characters)

☐ Unicode (Max. 35 characters)

Manufacturer Information

Maretron 1-866-550-9100 www.maretron.com

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 67 – DCR100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.10 DSM150

DSM150 Configuration is only available through the DSM250 Emulator. Please refer to Section 5.37 in this document and the *DSM150 User's Manual* for details.

5.11 DSM200

DSM200 Configuration is only available through the DSM250 Emulator. Please refer to Section 5.37 in this document and the *DSM200 User's Manual* for details.

5.12 DSM250

DSM250 Configuration is only available through the DSM250 Emulator.
Please refer to Section 5.37 in this document and the *DSM250 User's Manual* for details.

5.13 DSM410

DSM410 Configuration is only available through the DSM250 Emulator.
Please refer to Section 5.37 in this document and the *DSM410 User's Manual* for details.

5.14 DSM570

DSM570 Configuration is only available through the DSM250 Emulator.
Please refer to Section 5.37 in this document and the *DSM570 User's Manual* for details.

5.15 DST110

5.15.1 General Tab

This tab contains commonly-used configuration items.

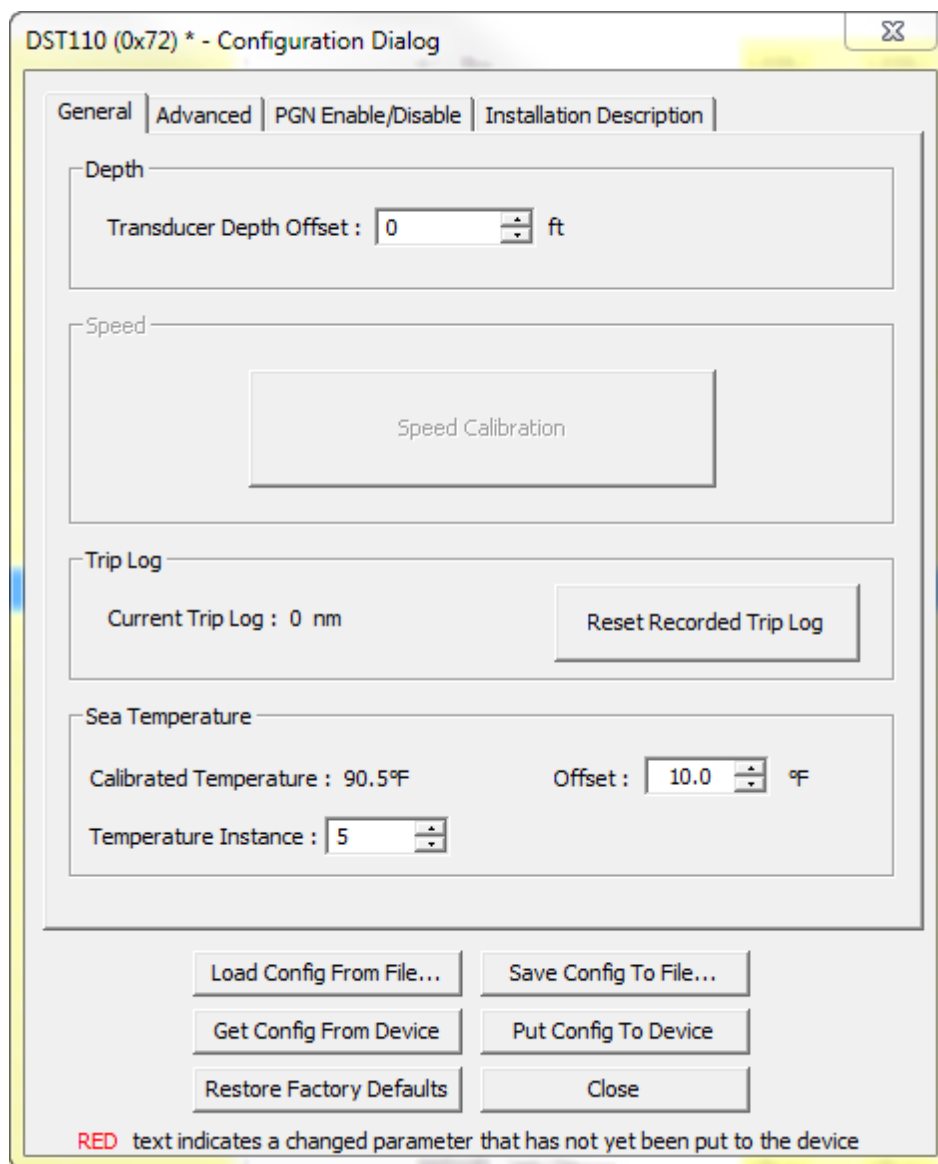


Figure 68 – DST110 General Tab

Transducer Depth Offset

The DST110 measures the depth of the water from the transducer, which may or may not be the waterline depth or the depth of water underneath the keel depending on the mounting location. Fortunately, the DST110 can be calibrated for reporting the offset from the transducer to the waterline or the DST110 can be calibrated to report the offset between the transducer and the lowest point on the vessel. Depth display readings then report either the waterline depth or the depth under keel depending on your preference. A negative value will represent depth from the keel, while a positive value will represent depth from the waterline.

Speed Calibration

While the Maretron DST110 as shipped from the factory accurately represents the speed of water traveling past the paddlewheel sensor, the speed of water past the sensor might not be the same as the speed of the vessel, due to hull shape or how or where the DST110 is mounted. The DST110 can be programmed with a multiplier by which the internally calculated speed through water is multiplied before the speed through water value is transmitted over the NMEA 2000 network. In this way, the DST110 can be programmed such that its transmitted speed through water can more closely match the speed of the vessel.

Current Trip Log

The Maretron DST110 automatically logs two different cumulative distances; 1) total cumulative distance since installation, and 2) cumulative voyage distance (trip log) since reset. You cannot zero out the total cumulative distance since installation but you are able to zero out the trip log.

Reset Recorded Trip Log

Press this button to set the trip log in the Maretron DST110 to zero.

Calibrated Sea Temperature

This field shows the sea temperature, including the sea temperature offset, being transmitted by the DST110.

Sea Temperature Offset

The Maretron DST110 may be programmed with an offset value which is added to the water temperature measured by the DST110 before the value is transmitted over the NMEA 2000 network.

Sea Temperature Instance

This field should be programmed with the data instance number to be used by the DST110 when it transmits sea temperature.

5.15.2 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

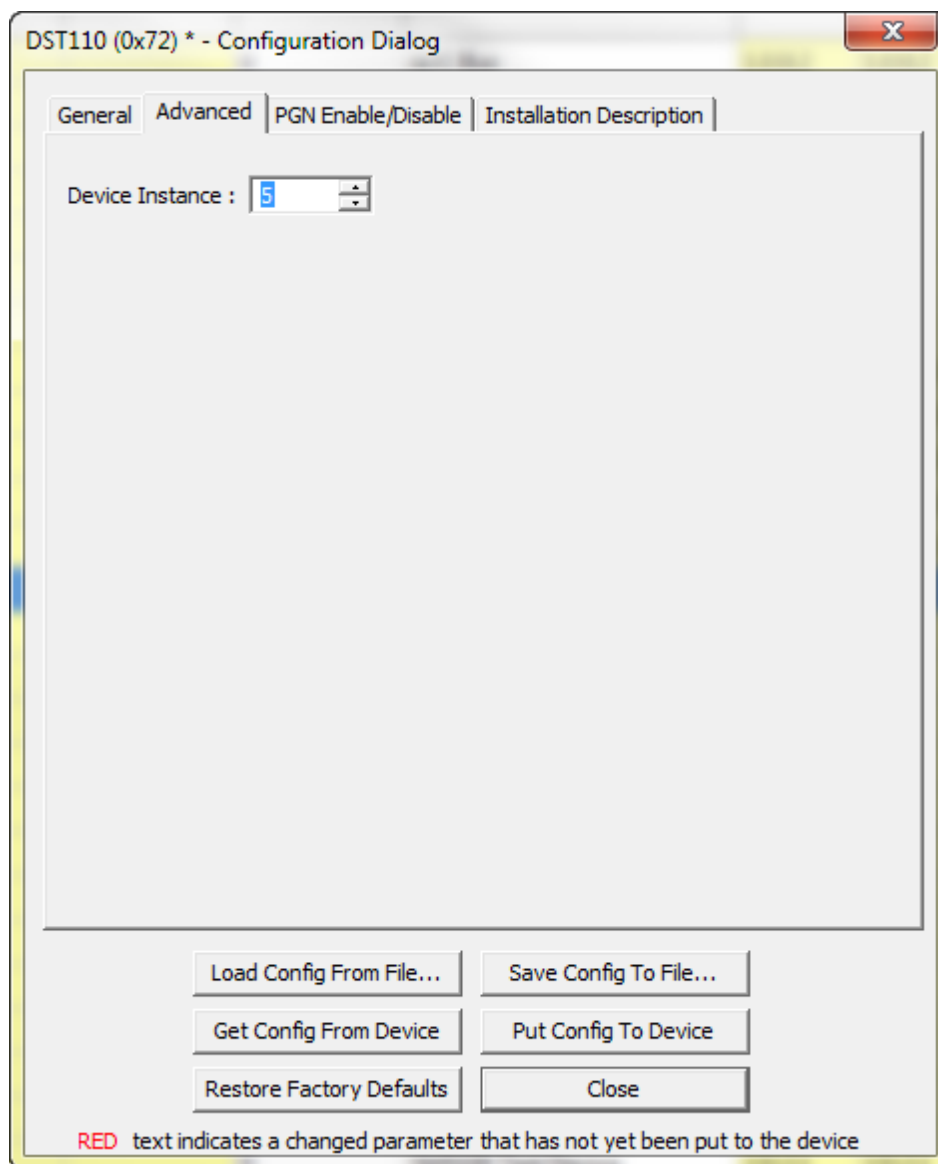


Figure 69 – DST110 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.15.3 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) "Disable" – this will turn off the periodic transmission of this message
- 2) "Default" – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

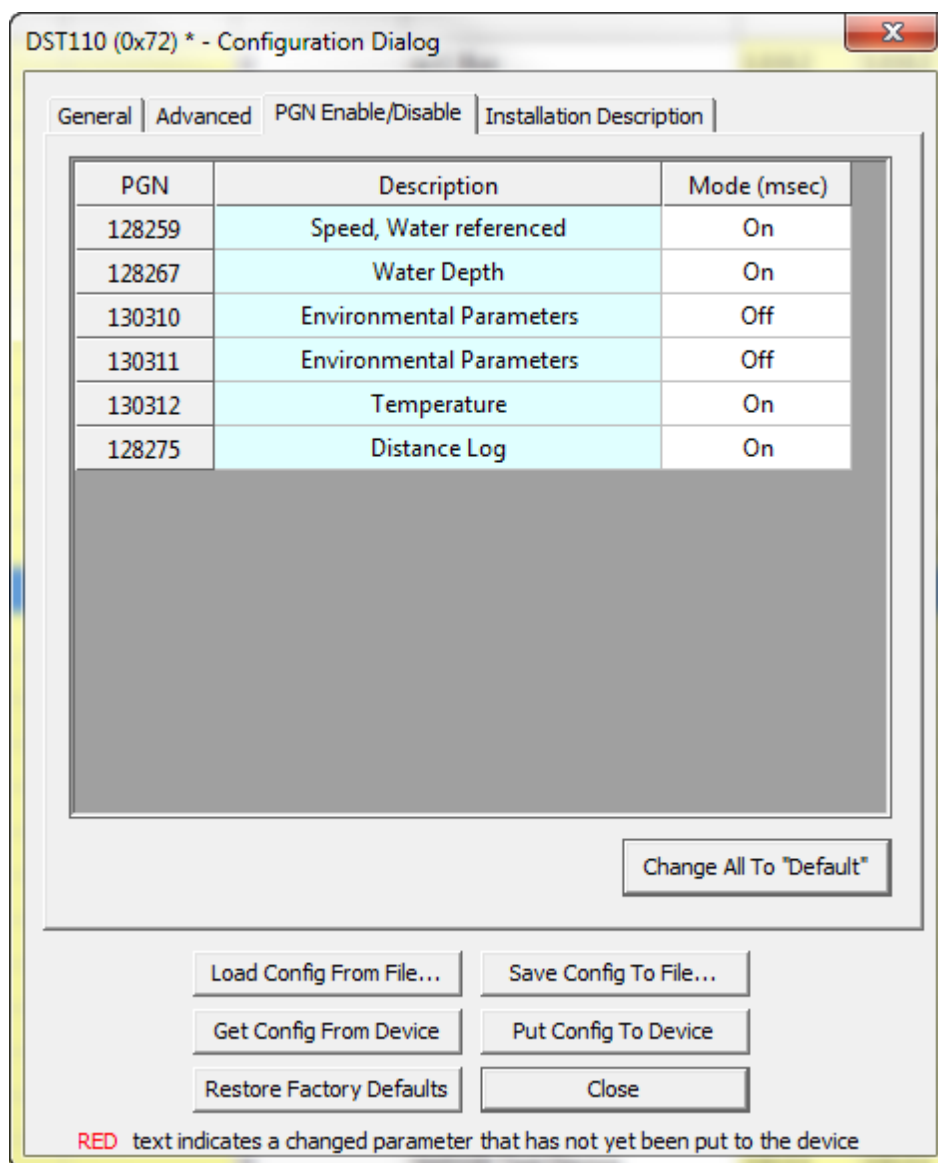


Figure 70 – DST110 PGN Enable/Disable Tab

5.16 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

The screenshot shows a configuration dialog box titled "DST110 (0x72) * - Configuration Dialog". It has four tabs: "General", "Advanced", "PGN Enable/Disable", and "Installation Description", with the last one being active. The dialog is divided into three main sections. The first section, "Installation Description #1:", has two radio buttons: "ASCII (English language only, Max. 70 characters)" (selected) and "Unicode (Max. 35 characters)". Below is a text field containing "Port Sounder". The second section, "Installation Description #2:", also has two radio buttons: "ASCII (English language only, Max. 70 characters)" (selected) and "Unicode (Max. 35 characters)". Below is a text field containing "Installed 2013". The third section, "Manufacturer Information", has a text field containing "Maretron 1-866-550-9100 www.maretron.com". At the bottom, there are six buttons: "Load Config From File...", "Save Config To File...", "Get Config From Device", "Put Config To Device", "Restore Factory Defaults", and "Close". A red text label at the bottom left states: "RED text indicates a changed parameter that has not yet been put to the device".

Figure 71 – DST110 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.17 EMS100

5.17.1 General Tab

This tab contains commonly-used configuration items.

The screenshot shows the 'EMS100 (0x94) 1220251 - Configuration Dialog' with the 'General' tab selected. The dialog has four tabs: 'General', 'Advanced', 'PGN Enable/Disable', and 'Installation Description'. The 'General' tab contains the following fields and controls:

- Label:** A text box with the label '(Max. 32 Characters)' containing the text 'Engine Main'.
- Boost Pressure:** A group box containing:
 - Gauge Type: YANMAR (dropdown)
 - Sender Type: YANMAR (dropdown)
 - Sender Offset: 0 (spin box)
- Drive Trim:** A group box containing:
 - Gauge Type: YANMAR (dropdown)
 - Sender Type: YANMAR (dropdown)
 - Sender Offset: 0 (spin box)
- Oil Pressure:** A group box containing:
 - Gauge Type: YANMAR (dropdown)
 - Sender Type: YANMAR (dropdown)
 - Sender Offset: 0 (spin box)
- Water Temperature:** A group box containing:
 - Gauge Type: YANMAR (dropdown)
 - Sender Type: YANMAR (dropdown)
 - Sender Offset: 0 (spin box)
- Engine Instance:** 0 (spin box)
- Tach. Flywheel Teeth:** 129.0 (spin box)
- Preset Engine Hours:** 2211 (spin box)

At the bottom, there are five buttons: 'Load Config From File...', 'Save Config To File...', 'Restore Factory Defaults', 'Get Config From Device', and 'Put Config To Device'. A 'Close' button is also present. A red text note at the bottom states: 'RED text indicates a changed parameter that has not yet been put to the device'.

Figure 72 – EMS100 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Boost Pressure Gauge Type

The EMS100 comes from the factory preprogrammed with the characteristics of boost pressure gauge types for supported engines. If the EMS100 is used with an analog boost pressure gauge, you must select the correct type of gauge for this setting for the data to be displayed correctly. If you have no boost pressure gauge present, select the “No Gauge” option for this setting.

Boost Pressure Sender Type

The EMS100 comes from the factory preprogrammed with the characteristics of boost pressure senders for supported engines. If the engine to which you are connecting the EMS100 has a boost pressure sender, you must select the correct type of boost pressure sender for this setting for the data to be displayed correctly. If you have no boost pressure sender present, select the “Disabled” option for this setting.

Boost Pressure Sender Offset

Often, the characteristics of individual boost pressure senders vary from their specified values. This setting allows you to apply an offset to the resistance value of the boost pressure sender to allow you to bring the digital value reported by the EMS100 into agreement with that displayed by the analog gauge.

Oil Pressure Gauge Type

The EMS100 comes from the factory preprogrammed with the characteristics of oil pressure gauge types for supported engines. If the EMS100 is used with an analog oil pressure gauge, you must select the correct type of gauge for this setting for the data to be displayed correctly. If you have no oil pressure gauge present, select the “No Gauge” option for this setting.

Oil Pressure Sender Type

The EMS100 comes from the factory preprogrammed with the characteristics of oil pressure senders for supported engines. If the engine to which you are connecting the EMS100 has an oil pressure sender, you must select the correct type of oil pressure sender for this setting for the data to be displayed correctly. If you have no oil pressure sender present, select the “Disabled” option for this setting.

Oil Pressure Sender Offset

Often, the characteristics of individual oil pressure senders vary from their specified values. This setting allows you to apply an offset to the resistance value of the oil pressure sender to allow you to bring the digital value reported by the EMS100 into agreement with that displayed by the analog gauge.

Drive Trim Gauge Type

The EMS100 comes from the factory preprogrammed with the characteristics of drive trim gauge types for supported engines. If the EMS100 is used with an analog drive trim gauge, you must select the correct type of gauge for this setting for the data to be displayed correctly. If you have no drive trim gauge present, select the “No Gauge” option for this setting.

Drive Trim Sender Type

The EMS100 comes from the factory preprogrammed with the characteristics of drive trim senders for supported engines. If the engine to which you are connecting the EMS100 has a drive trim sender, you must select the correct type of drive trim sender for this setting for the data to be displayed correctly. If you have no drive trim sender present, select the “Disabled” option for this setting.

Drive Trim Sender Offset

Often, the characteristics of individual drive trim senders vary from their specified values. This setting allows you to apply an offset to the resistance value of the drive trim sender to allow you to bring the digital value reported by the EMS100 into agreement with that displayed by the analog gauge.

Water Temperature Gauge Type

The EMS100 comes from the factory preprogrammed with the characteristics of water temperature gauge types for supported engines. If the EMS100 is used with an analog water temperature gauge, you must select the correct type of gauge for this setting for the data to be displayed correctly. If you have no water temperature gauge present, select the “No Gauge” option for this setting.

Water Temperature Sender Type

The EMS100 comes from the factory preprogrammed with the characteristics of water temperature senders for supported engines. If the engine to which you are connecting the EMS100 has a water temperature sender, you must select the correct type of water temperature sender for this setting for the data to be displayed correctly. If you have no water temperature sender present, select the “Disabled” option for this setting.

Water Temperature Sender Offset

Often, the characteristics of individual water temperature senders vary from their specified values. This setting allows you to apply an offset to the resistance value of the water temperature sender to allow you to bring the digital value reported by the EMS100 into agreement with that displayed by the analog gauge.

Engine Instance

To allow display equipment to distinguish between data coming from different engines, the NMEA 2000 network requires that each engine be assigned a unique instance number in the range of 0-252. The EMS100 comes from the factory programmed with an instance number of 0. Conventions for instance numbers for common engine configurations are as follows:

Single Engine = 0

Dual Engines: Port Engine = 0, Starboard Engine = 1

Triple Engines: Port Engine = 0, Starboard Engine = 1, Center Engine = 2

Tach. Flywheel Teeth

The EMS100 needs to know the number of flywheel teeth on the engine (or the number of alternator pulses per revolution) to correctly calculate engine RPM. Use this setting to program the EMS100 with the number of flywheel teeth or alternator pulses per revolution for the engine the EMS100 is connected to.

Preset Engine Hours

The EMS100 reports engine hours based on how long the EMS100 has been powered from the engine. The EMS100 comes from the factory preprogrammed with an engine hours reading of 0 hours. If you are installing the EMS100 on an engine that has been in service, or if you have overhauled an engine, you can use this setting to preset the engine hours reading to the desired value.

5.17.2 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

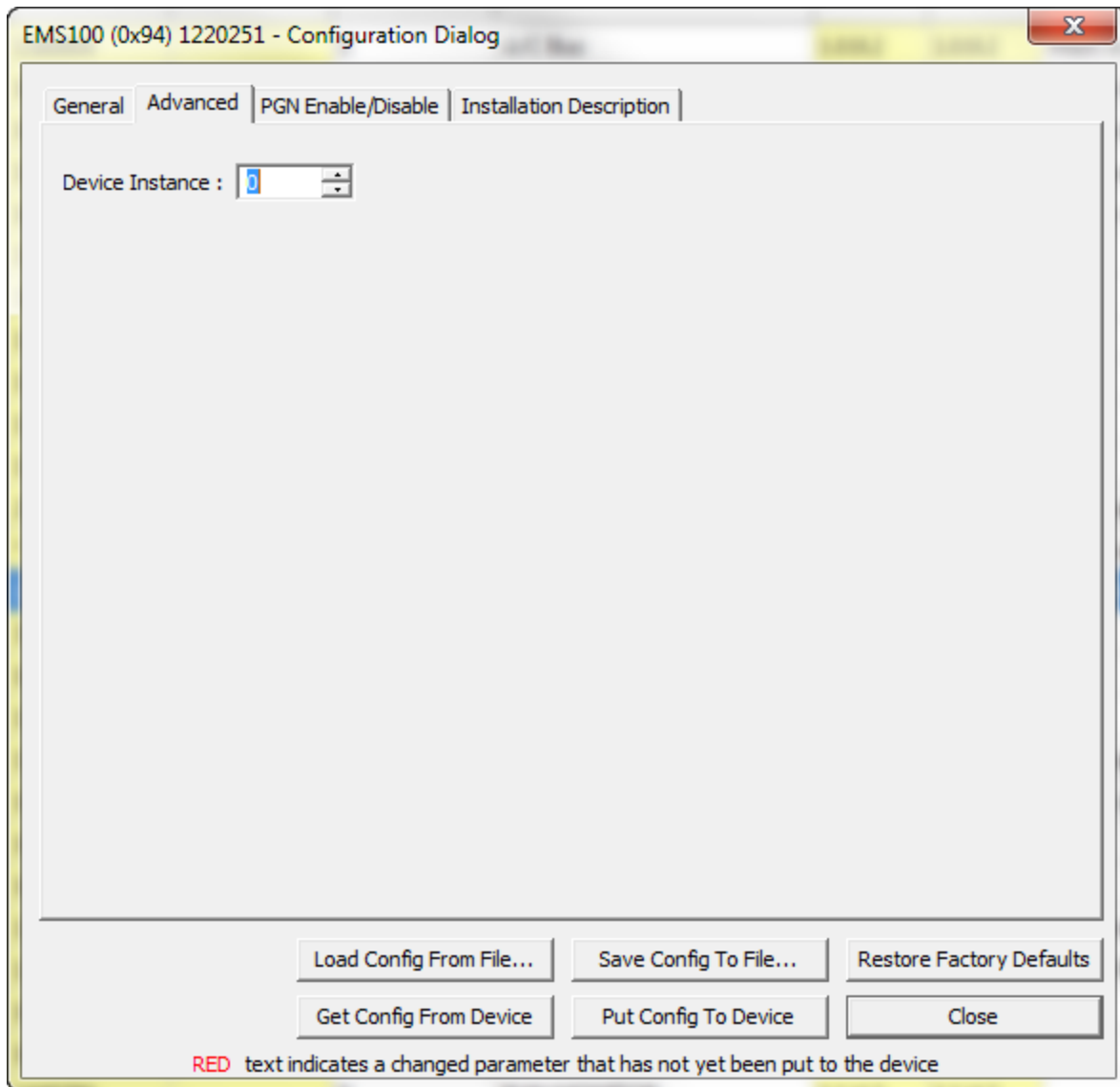


Figure 73 – EMS100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.17.3 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

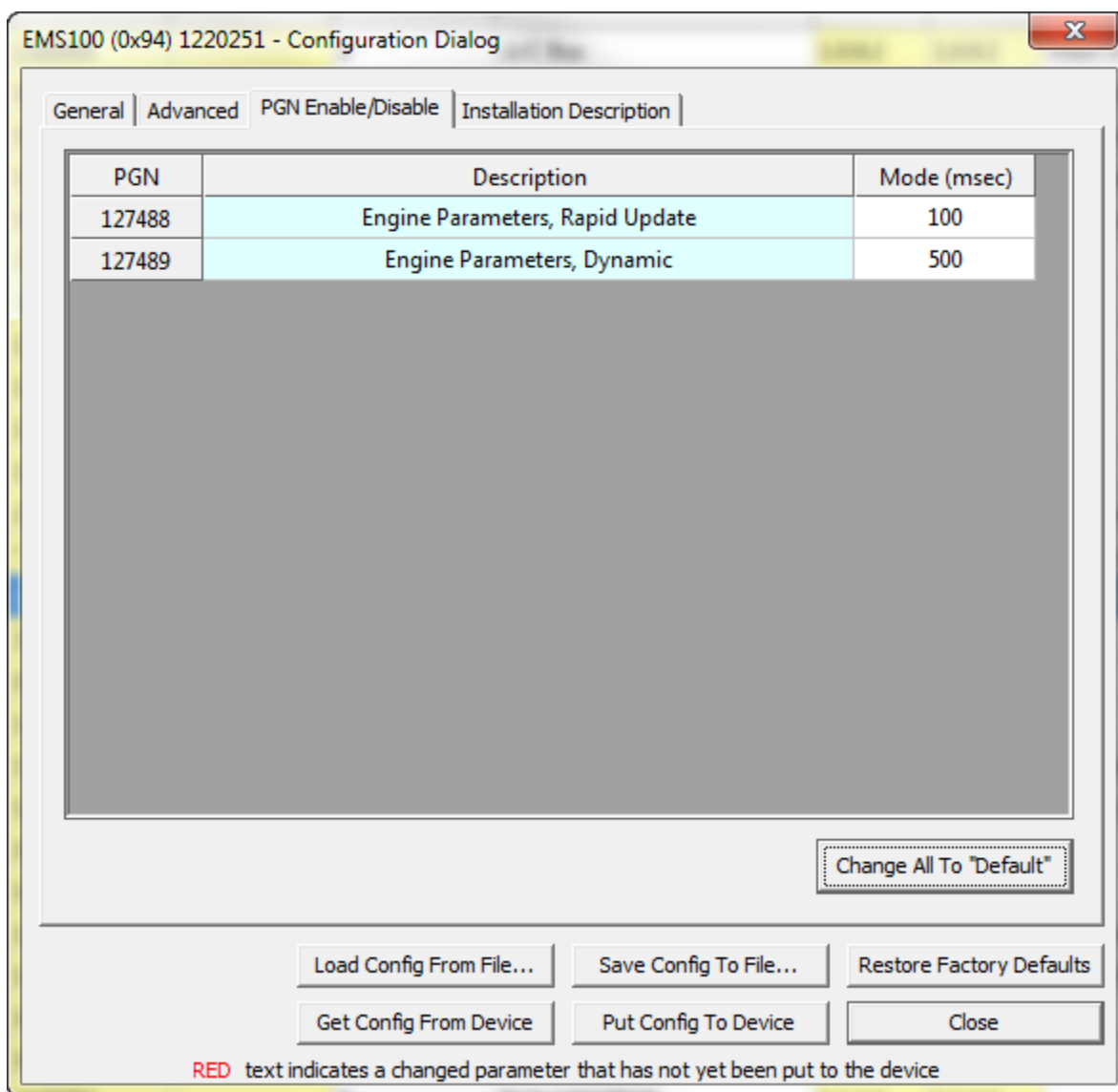


Figure 74 – EMS100 PGN Enable/Disable tab

5.17.4 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

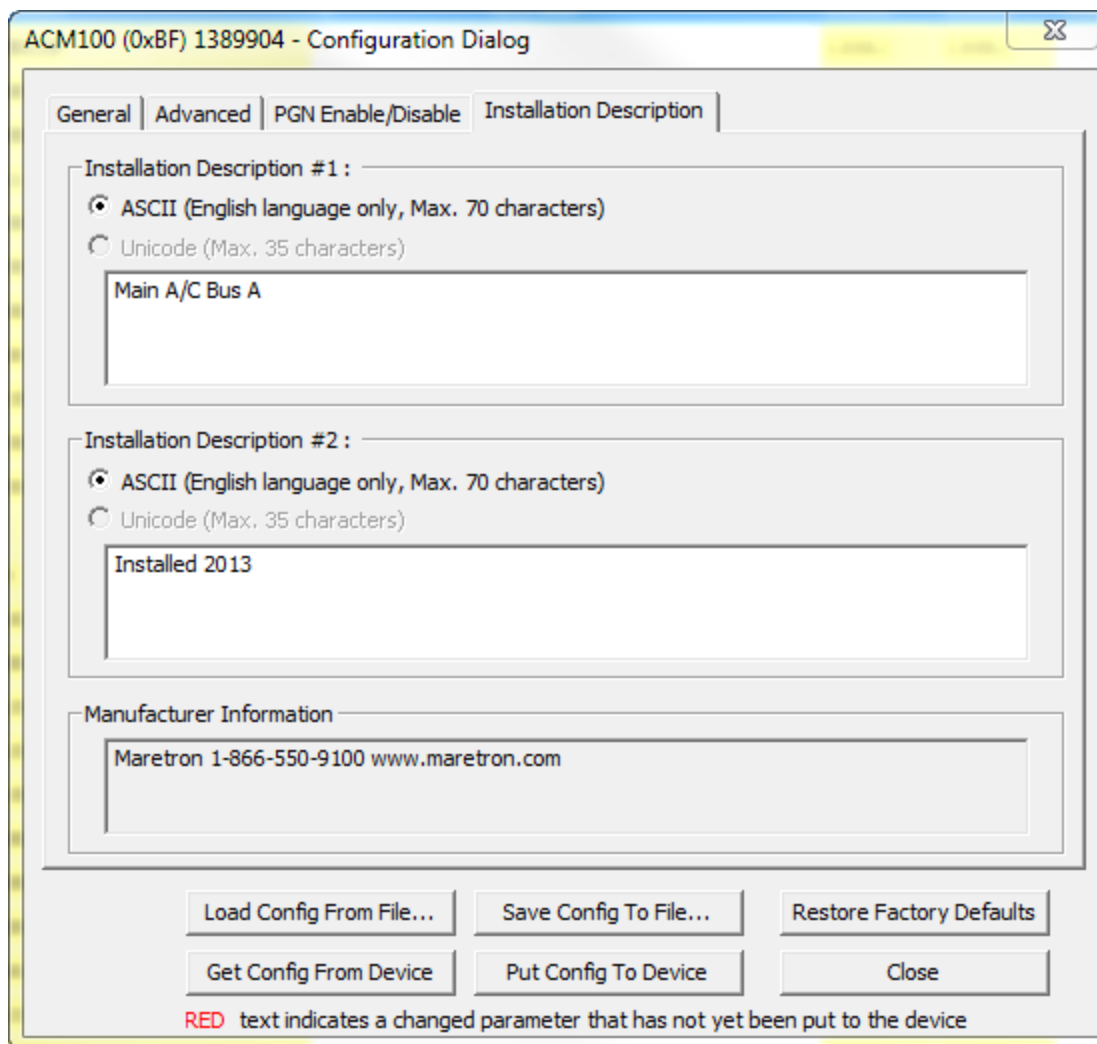


Figure 75 – EMS100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.18 FFM100

5.18.1 General Tab

This tab contains commonly-used configuration items.

The FFM100 General Tab appears differently depending on the selected operating mode. Please refer to the details in the remainder of this section.

FFM100 (0x32) 1662319 - Configuration Dialog

General | Advanced | PGN Enable/Disable | Installation Description

Device Label (Max. 32 Characters):

Operating Mode: Channel #0 Temperature: Channel #1 Temperature:

Channel #0

Channel: Total Volume:

Flow Rate: Engine Instance: Label:

K-Factor: Flow Instance: Label:

Data Damping Period: sec Volume Instance: Label:

Fluid Type: Temperature Source: Temperature Instance: Label:

Channel #1

Channel: Temperature Coefficient: %/°C Total Volume:

Flow Rate: Engine Instance: Label:

K-Factor: Flow Instance: Label:

Data Damping Period: sec Volume Instance: Label:

Fluid Type: Temperature Source: Temperature Instance: Label:

RED text indicates a changed parameter that has not yet been put to the device

Figure 76 – FFM100 General Tab (Differential Flow Rate)

FFM100 (0x32) 1662319 - Configuration Dialog - FFM100_1662319

General | Advanced | PGN Enable/Disable | Installation Description

Device Label (Max. 32 Characters)
Fuel Monitor

Operating Mode : Two Independent Sensors

Channel #0 Temperature : 56°F
Channel #1 Temperature : 111°F

Channel #0

Sensor : 3-Phase

Total Volume : 125705.7 G Reset Total Volume

Flow Rate : 32.4 GPH
K-Factor : 1000
Data Damping Period : 5.0 sec

Engine Instance : 0 Label : Port Engine
Flow Instance : 0 Label : Port Engine Flow
Volume Instance : 0 Label : Port Engine Volume
Temperature Instance : 0 Label : Port Engine Fuel Supply Temp

Fluid Type : Fuel
Temperature Source : User Defined-129

Channel #1

Sensor : 3-Phase Temperature Coefficient : 0.083 %/°C

Total Volume : 122528.3 G Reset Total Volume

Flow Rate : 31.6 GPH
K-Factor : 1000
Data Damping Period : 5.0 sec

Engine Instance : 1 Label : Stbd Engine
Flow Instance : 1 Label : Stbd Engine Flow
Volume Instance : 1 Label : Stbd Engine Volume
Temperature Instance : 1 Label : Stbd Engine Fuel Supply Temp

Fluid Type : Fuel
Temperature Source : User Defined-129

Load Config From File... Save Config To File... Restore Factory Defaults
Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 77 – FFM100 General Tab (Two Independent Flow Rates)

Device Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Operating Mode

The FFM100 can operate in one of two user-selectable operating modes:

Differential – this mode is used for diesel engines that recirculate unused fuel back into the fuel take. These engines will have separate supply and return fuel lines.

Two Independent Sensors – the FFM100 can measure flow rates from two independent sources; for example, a water flow rate on one channel and a gasoline fuel flow rate on another channel.

Channel #x Sensor

You may select the sensor type for each channel, or you may disable the channel. There are two sensor types you may select: 3-Phase, which include the Maretron fuel flow sensors that are designed for use with the FFM100, and 1-Phase, which is used for flow sensors that have a single fluid flow output signal.

NOTE: If the operating mode is set to “Differential Flow Rate”, then this parameter is unavailable for Channel #1.

Channel #x Engine Instance

Program this parameter to match the desired engine instance number of the flow rate and total fuel used for this channel. You can program this parameter to any value between 0 and 252.

NOTE: If the operating mode is set to “Differential Flow Rate”, then this parameter is unavailable for Channel #1.

Channel #x K-Factor

Program this parameter to match the K-factor that appears on the flow sensor connected to this channel.

Channel #x Temperature Instance

Program this parameter to match the desired instance number of the temperature reading for each channel. You can program this parameter to any value between 0 and 252. The default value for this parameter is 0.

Channel #x Engine Label

Each channel has a text label you can set to identify the load controlled by that channel (for example, “PORT ENGINE” or “COOLING WATER FLOW”). For each channel, set this to a value which describes the flow being monitored so that you can easily identify it in display devices. This label is transmitted for the NMEA 2000 Engine messages.

NOTE: If the operating mode is set to “Differential Flow Rate”, then this parameter is unavailable for Channel #1.

Channel #x Flow Label

Each channel has a text label you can set to identify the load controlled by that channel (for example, “COOLING WATER FLOW”). For each channel, set this to a value which describes the flow being monitored so that you can easily identify it in display devices. This label is

transmitted for the 65286 Maretron Proprietary Fluid Flow Rate and 65287 Maretron Proprietary Fluid Flow messages.

NOTE: If the operating mode is set to “Differential Flow Rate”, then this parameter is unavailable for Channel #1.

Channel #x Temperature Label

Program this parameter with a text string which identifies the temperature parameter being monitored by this channel. Maretron display products will display this label text when you are selecting data to display. This label is transmitted for the 130312 Temperature and 130316 Temperature, Extended Range messages.

Channel #x Data Damping Period

You can configure a damping parameter to smooth the flow rate readings or make them more responsive. The data damping is configurable between 0.2-25.0 seconds. The default data damping period is 3.0 seconds.

NOTE: If the operating mode is set to “Differential Flow Rate”, then this parameter is unavailable for Channel #1.

Channel #x Temperature Source

Program this parameter to match the desired instance number of the temperature reading for this channel. You can program this parameter to any value between 0 and 252. The default value for this parameter is 129 (User Defined).

Channel #x Reset Total Volume Recorded

The FFM100 maintains the total volume recorded in EEPROM, so that it is maintained across power cycles. Select this menu entry to reset the total volume recorded to zero.

NOTE: If the operating mode is set to “Differential Flow Rate”, then this parameter is unavailable for Channel #1.

Temperature Coefficient

NOTE: This parameter is available for Channel #1 only when the Operating Mode of the FFM100 is set to “Differential Mode”.

In a diesel engine, the diesel fuel is used to help cool the fuel injection system. Therefore, the fuel returned from the engine to the tank has a higher temperature than the fuel sent to the engine from the tank. The FFM100 accounts for this expansion by sensing the temperature at the supply flow sensor and the receive flow sensor and calculating the effect of the temperature difference on the fuel expansion. To do this compensation, this parameter is programmed with the appropriate value for thermal expansion coefficient of the fluid being measured. The default value of this field is (0.083%/°C), which is appropriate for diesel fuel. The configuration tools have predefined values for common fluids: diesel, engine oil, gasoline, and water. You may select one of these values or choose your own.

5.18.2 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

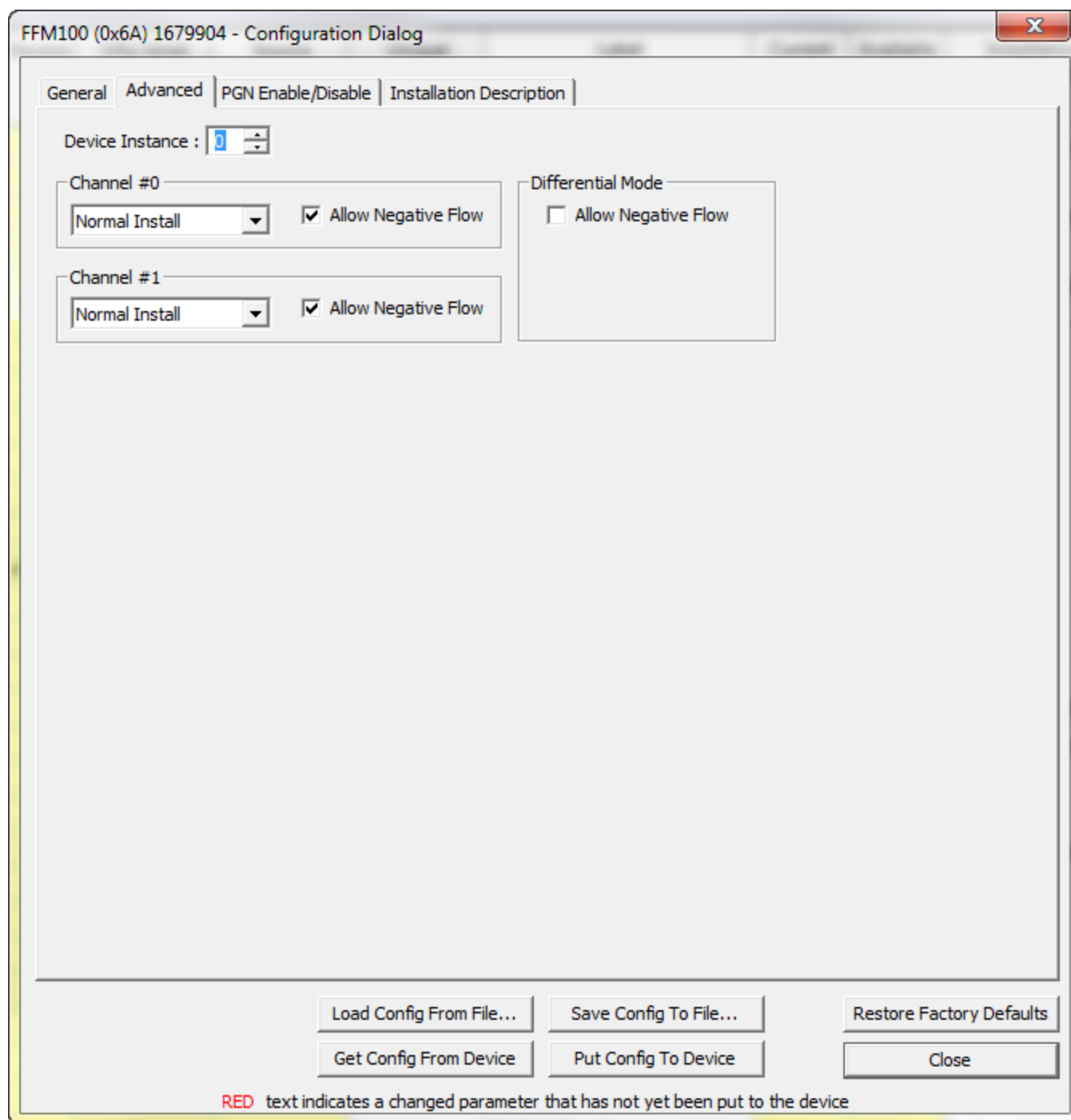


Figure 78 – FFM100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

Channel #x Installation

If you a fluid flow sensor with the “FLOW” arrow on the sensors pointing in the same direction as the fuel flow, you will not need to change this parameter from the factory default setting. If you inadvertently install the sensor in the reverse direction, rather than reinstalling the sensor, you may change this parameter from “Normal Install” to “Reverse Install”, and the FFM100 will compensate for the reversed installation of the flow sensor.

Channel #x Allow Negative Flow

In Two Independent Sensors mode, if you are using Maretron fuel flow sensors which can detect negative flow (flow in the opposite direction from the flow arrow), click this checkbox to allow negative values of fluid flow to be transmitted. If this checkbox is cleared, then a zero value will be transmitted for fluid flow whenever any negative flow is detected. This checkbox is ignored in Differential mode.

Differential Mode Allow Negative Flow

In Differential mode, if you want to see a negative flow value if the Return flow is greater than the Supply flow, check this checkbox. If this checkbox is cleared, then the FFM100 will transmit a zero flow value whenever the return flow is greater than the supply flow.

This checkbox is ignored in Two Independent Sensors mode.

5.18.3 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read “On”, if the device is currently transmitting the message, or “Off”, if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

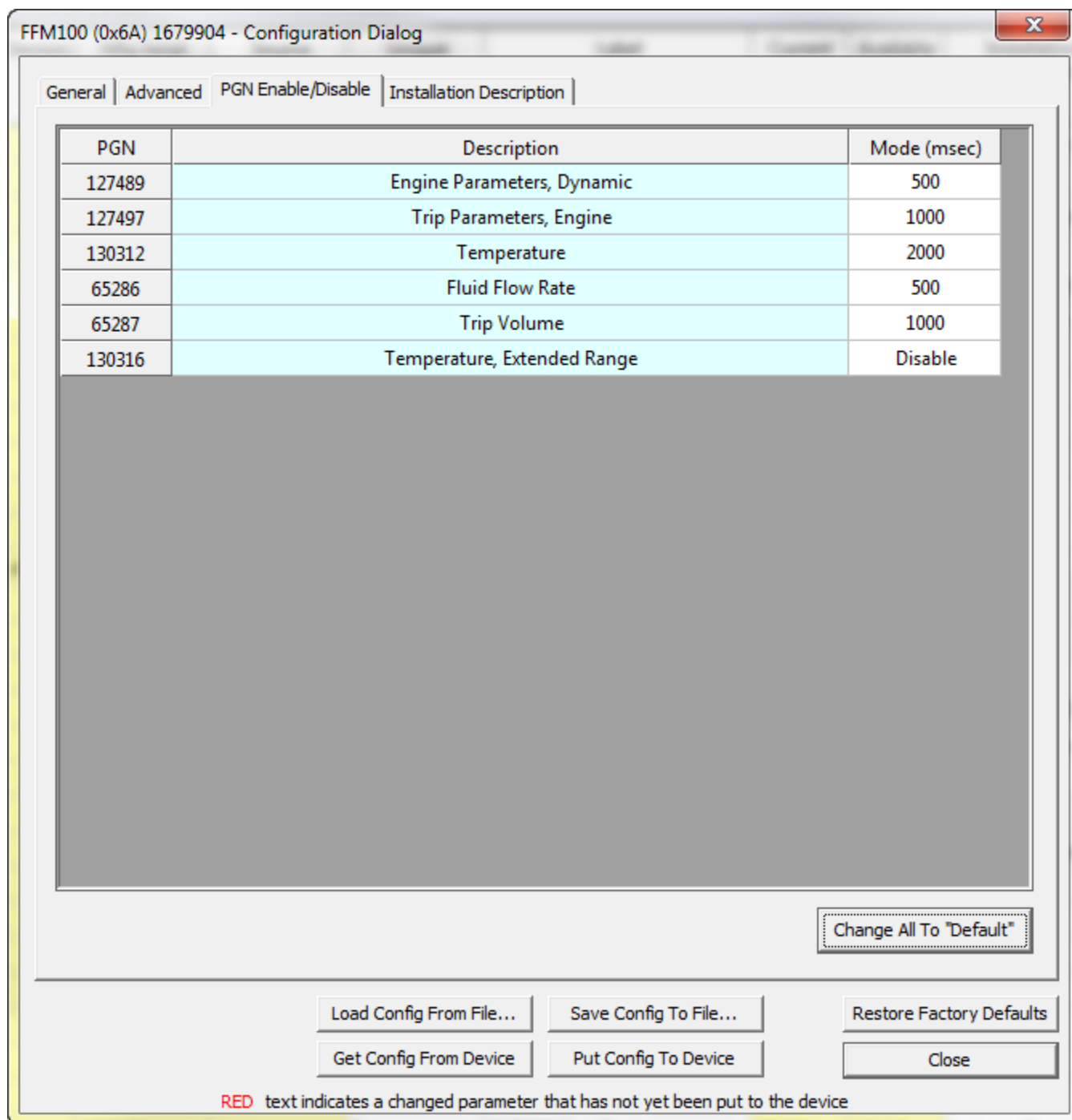


Figure 79 – FFM100 PGN Enable/Disable tab

5.18.4 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

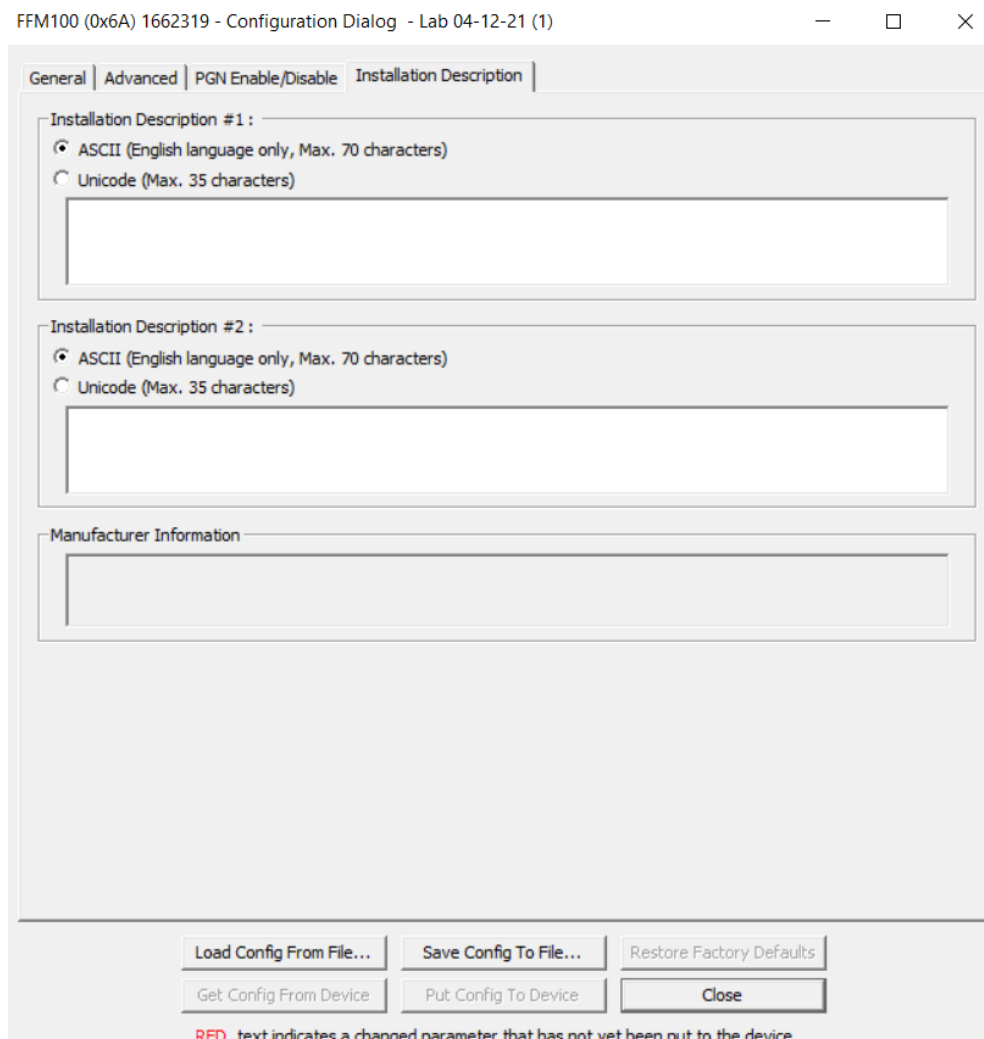


Figure 80 – FFM100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.19 FPM100

5.19.1 General Tab

This tab contains commonly-used configuration items.

FPM100 (0x58) 1659901 - Configuration Dialog

General | Advanced | PGN Enable/Disable | Installation Description

Label
(Max. 32 Characters)
Tank/Pressure Monitor

Channel #0
Function: Tank Level Label: Port Engine Fuel
Pressure at 4mA: 0.0 PSI Tank Capacity: 5600.0 Gal Tank Type: Fresh Water
Pressure at 20mA: 5.0 PSI Tank Number: 0 Data Damping Period: 16.0 sec Tank Levels Calibration

Channel #1
Function: Pressure/Vacuum Label: Steering Hydraulic Pressure
Pressure at 4mA: 0.0 PSI Source: Water Pressure
Pressure at 20mA: 1000.0 PSI Instance: 1 Data Damping Period: 3.0 sec

Channel #2
Function: Pressure/Vacuum Label: Air Pressure
Pressure at 4mA: 0.0 PSI Source: Water Pressure
Pressure at 20mA: 5.0 PSI Instance: 2 Data Damping Period: 3.0 sec

Channel #3
Function: Pressure/Vacuum Label:

Load Config From File... Save Config To File... Restore Factory Defaults
Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 81 – FPM100 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Function

The FPM100 has 6 individually configurable channels. Each channel can be programmed to operate in one of three modes:

- Pressure/Vacuum Mode – In this mode, the FPM100 measures and transmits pressure and/or vacuum directly over the NMEA 2000 network
- Tank Mode – In this mode, the FPM100 measures pressure and uses information about the tank dimensions and the type of fluid in the tank to calculate a tank level, which is transmitted over the NMEA 2000 network
- Disable – The channel is disabled and transmits no data over the NMEA 2000 network

The Disable mode requires no configuration. The following sections describe in detail the configuration of an FPM100 channel for Pressure/Vacuum Mode and in Tank Mode.

Label

Program this parameter with a text string which identifies the parameter being monitored by this channel. Maretron display products will display this label text when you are selecting data to display.

Pressure at 4mA

Program this parameter to match the pressure reading of the pressure transducer when it is sourcing a current of 4mA. You can determine this value by examining the specification of the pressure transducer being used.

Pressure at 20mA

Program this parameter to match the pressure reading of the pressure transducer when it is sourcing a current of 20mA. You can determine this value by examining the specification of the pressure transducer being used.

Tank Capacity

NOTE: This parameter is available only when the channel is configured into Tank mode.

In addition to indicating the fluid level within a tank, the FPM100 also can be configured or programmed with the attached tank's capacity. This way, you will be able to view the tank's capacity as well as the amount of liquid remaining anywhere on the vessel where there is an NMEA 2000 compatible display.

Instance

NOTE: This parameter is available only when the channel is configured into Pressure/Vacuum mode.

Program this parameter to match the desired instance number of the pressure reading for this channel. You can program this parameter to any value between 0 and 252.

Tank Number

NOTE: This parameter is available only when the channel is configured into Tank mode.

As shipped from the factory, the FPM100 transmits the Tank Number as "0". The FPM100 supports up to sixteen tanks (0 through 15) for a given type of tank, which means you can monitor up to 16 separate fuel tanks or 16 separate fresh water tanks.

Source

NOTE: This parameter is available only when the channel is configured into Pressure/Vacuum mode.

You can configure a “Source” descriptor to be transmitted with the pressure reading which is used to provide an indication of the source of the pressure data for this channel. Choices are as follows:

- Water Pressure
- Atmospheric Pressure
- Compressed Air Pressure
- Hydraulic Pressure
- Steam Pressure
- 16 User Defined pressure sources (User Defined 129 – User Defined 144)

Tank Type

NOTE: This parameter is available only when the channel is configured into Tank mode.

As shipped from the factory, the FPM100 transmits the tank type as “Fuel”. You can reconfigure the FPM100 for any of these tank types:

- Fuel
- Fresh Water
- Waste Water
- Live Well
- Oil
- Black Water
- Reserved-1 through Reserved-7 (if none of the above types apply)

Data Damping Period

You can configure a damping parameter to smooth the tank level or pressure/vacuum readings or make them more responsive. The data damping is configurable between 0.2-25.0 seconds. The default data damping for a channel in Tank mode is 15.0 seconds. The default data damping for a channel in Pressure/Vacuum mode is 3.0 seconds.

Tank Levels Calibration

NOTE: This parameter is available only when the channel is configured into Tank mode.

Pressing this button opens the Tank Calibration dialog, which is shown below.

There are two methods of calibration: Manual Table and Step Fill Table

5.19.2 Manual Table

Using the manual table method, you enter each entry of the measured parameter (depth) and the level of fluid in the tank. The table may have as few as 2 entries (for a tank with rectangular cross-section) or as many as 16 entries (for a tank with a complex cross-section).

FPM100 (0x58) 1659901 CH:0 - Tank Calibration

Manual Table | Step Fill

Current Tank Calibration

Entry	Depth (inch)	Level (%)
1	0.0	0.00
2	138.4	100.00
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	-	-

Fluid Density :
1000 (Fresh Water) kg/cu.m

Number of Table Entries: 2

Load Config From File... Save Config To File...
Get Config From Device Put Config To Device
Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 82 – FPM100 Tank Calibration Manual Table Window

Fluid Density

To convert the pressure measured into the height of a column of fluid, the FPM100 must know the density of the fluid being measured. This control allows you to program the FPM100 with the proper fluid density. You may choose from Diesel Fuel 20, Diesel Fuel 60, Fresh Water, or

you may enter a different numeric density value appropriate to the fluid whose depth is being measured.

Number of Table Entries

You may choose the number of entries to be in the calibration table. Two is sufficient for a tank with a rectangular cross-section. The FPM100 supports up to 16 table entries for supporting tanks with more complex cross-sections.

Current Tank Calibration

This grid shows the values of the tank calibration table. Each line of the grid has two entries:

- 1) Tank Depth – this is the height of the fluid above the pressure sensor port
- 2) Level (%) – this is the percent full the tank is at the specific tank depth

5.19.3 Step Fill Table

In the Step Fill Table method, you start with an empty tank, and then fill the tank with fluid, stopping at intermediate points to enter the amount of fluid put into the tank thus far, ending once the tank is full. You may enter between two and sixteen calibration points.

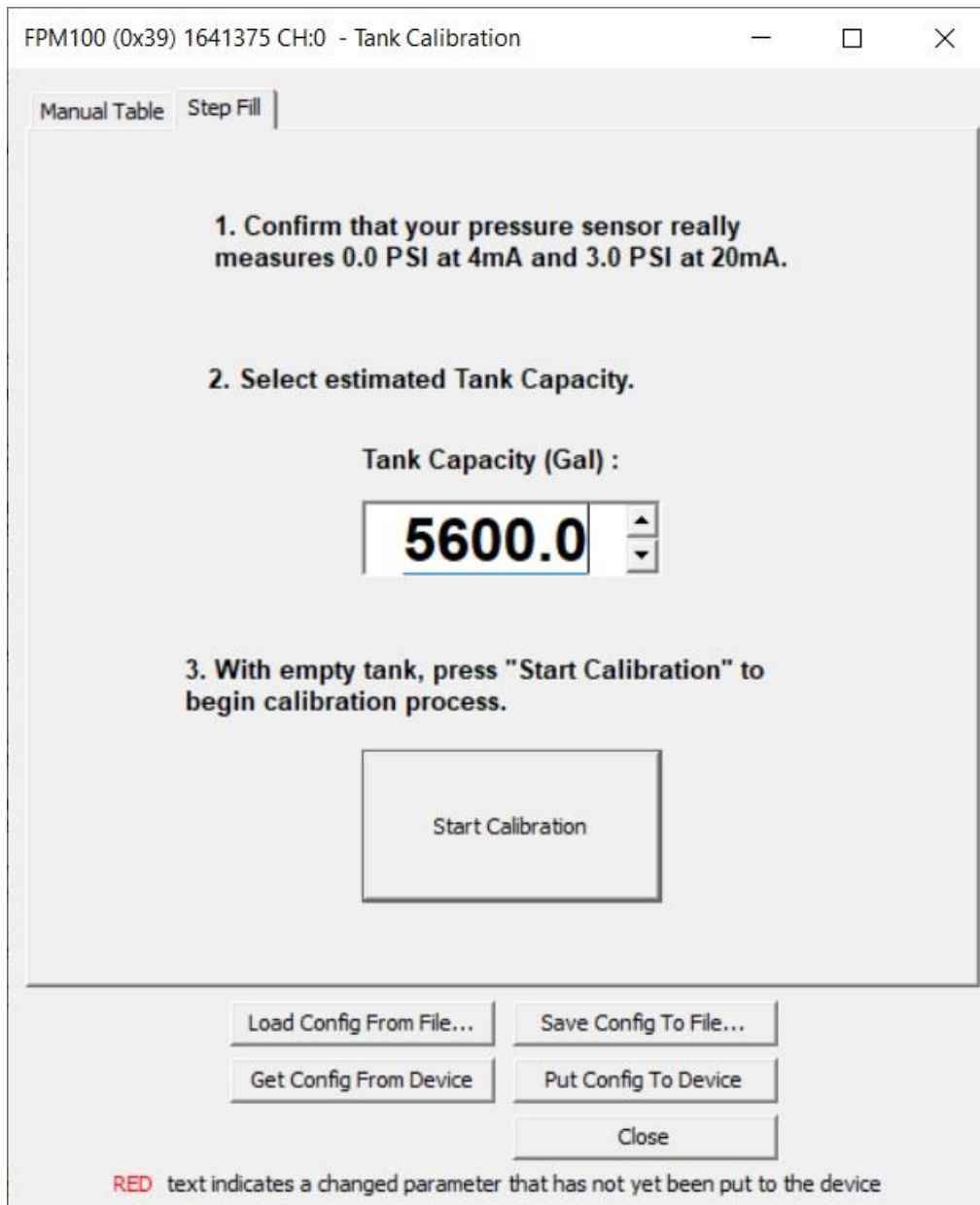


Figure 83 – FPM100 Step Fill Calibration Initial Window

To use this method, use the following steps:

- 1) Enter the estimated total capacity of the tank into the “Total Capacity” text box.
- 2) Press the “Start Calibration” button. You will now see the Step Fill Calibration window displayed, as shown below.

Entry	Depth (cm)	Level (%)	Volume (Gal)	Current
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-

Tank Capacity (Gal) : 5600.0

Measured Current (mA): 15.7

Current Level (Gal) : 0.0

Step 1 of 16

Complete

Abort

Figure 84 – FPM100 Step Fill Calibration Initial Window

- 3) Enter “0” into the Current Level text box, and press “Step”. You have now entered the first point of the table.
- 4) Partially fill the tank. Enter the amount of fluid pumped into the tank into the “Current Level” text box, and press “Step” (if you make a mistake entering a level, you can press “Back” and re-enter the level. If you want to cancel the process, press the “Abort” button).
- 5) Repeat the previous step until the tank is completely filled.

Once you have entered the last point, where the tank is 100% full, press “Complete”. This will cause the table to be stored in the device.

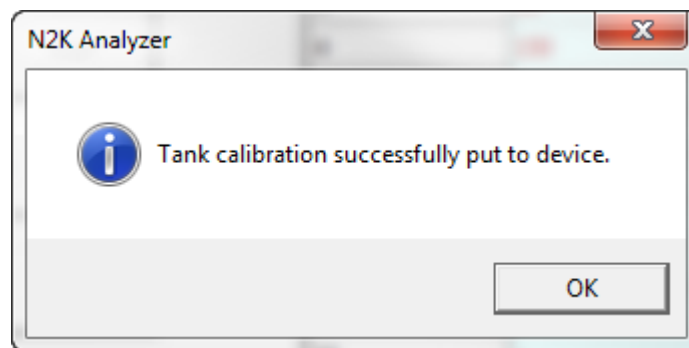


Figure 85 – FPM100 Tank Fill Confirmation Dialog Box

5.19.4 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

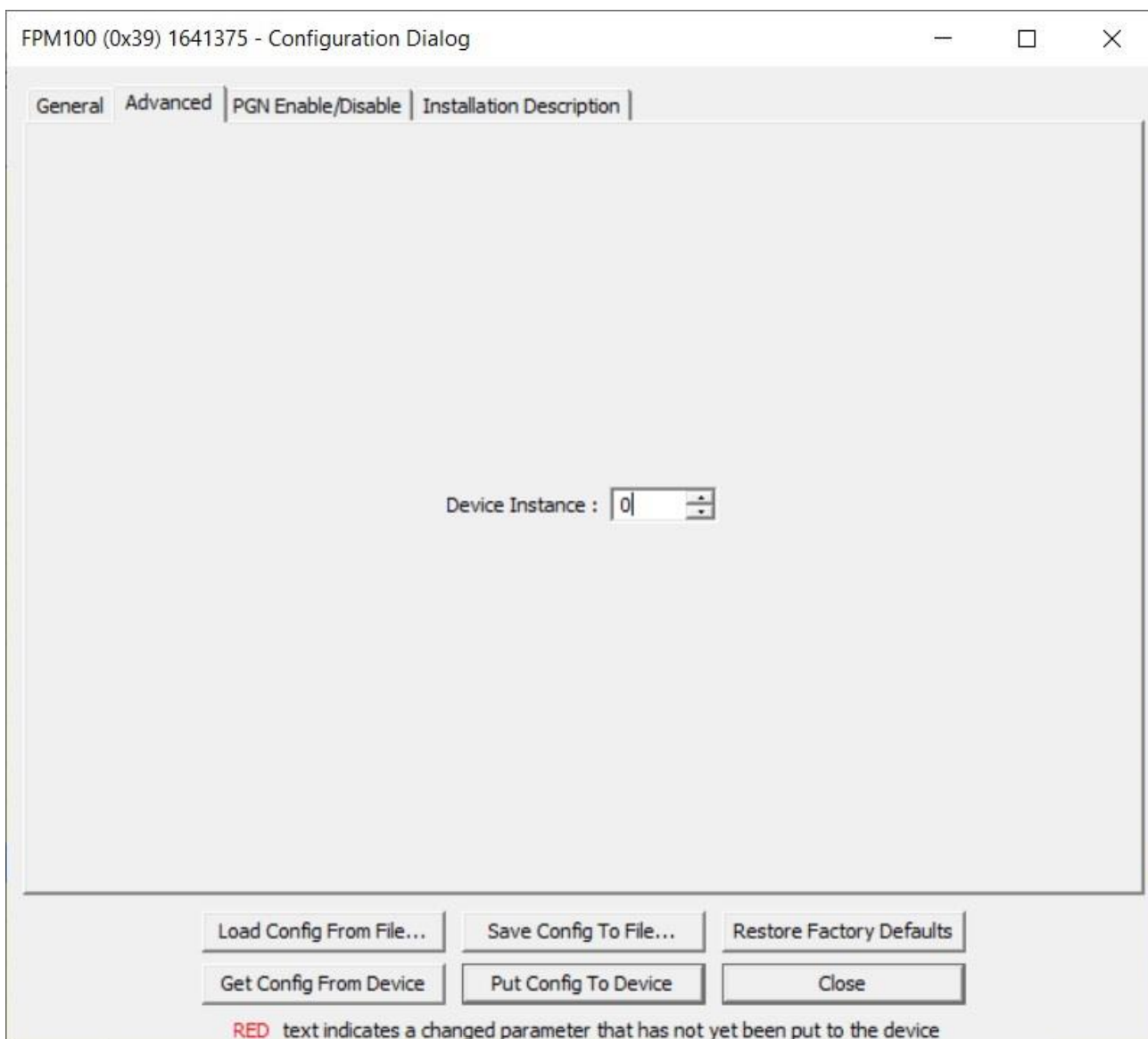


Figure 86 – FPM100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.19.5 PGN Enable / Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the

time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGNs tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

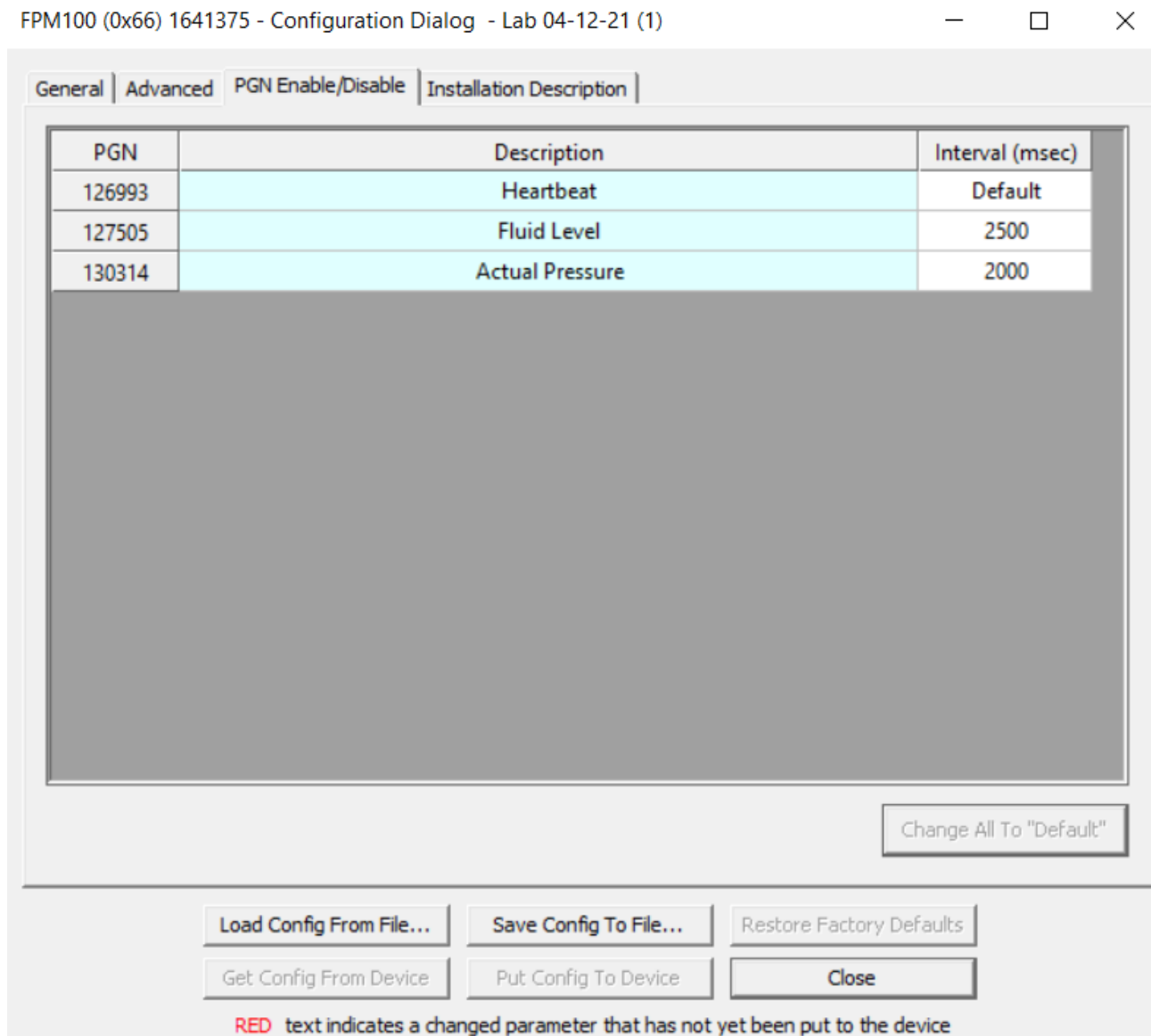


Figure 87 – FPM100 PGN Enable/Disable tab

5.19.6 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

FPM100 (0x66) 1641375 - Configuration Dialog - Lab 04-12-21 (1)

General | Advanced | PGN Enable/Disable | **Installation Description**

Installation Description #1 :
☒ ASCII (English language only, Max. 70 characters)
☐ Unicode (Max. 35 characters)
SB fuel

Installation Description #2 :
☒ ASCII (English language only, Max. 70 characters)
☐ Unicode (Max. 35 characters)

Manufacturer Information

Load Config From File... Save Config To File... Restore Factory Defaults
Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 91 – FPM100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.20 GPS100

5.20.1 General Tab

This tab contains commonly-used configuration items.

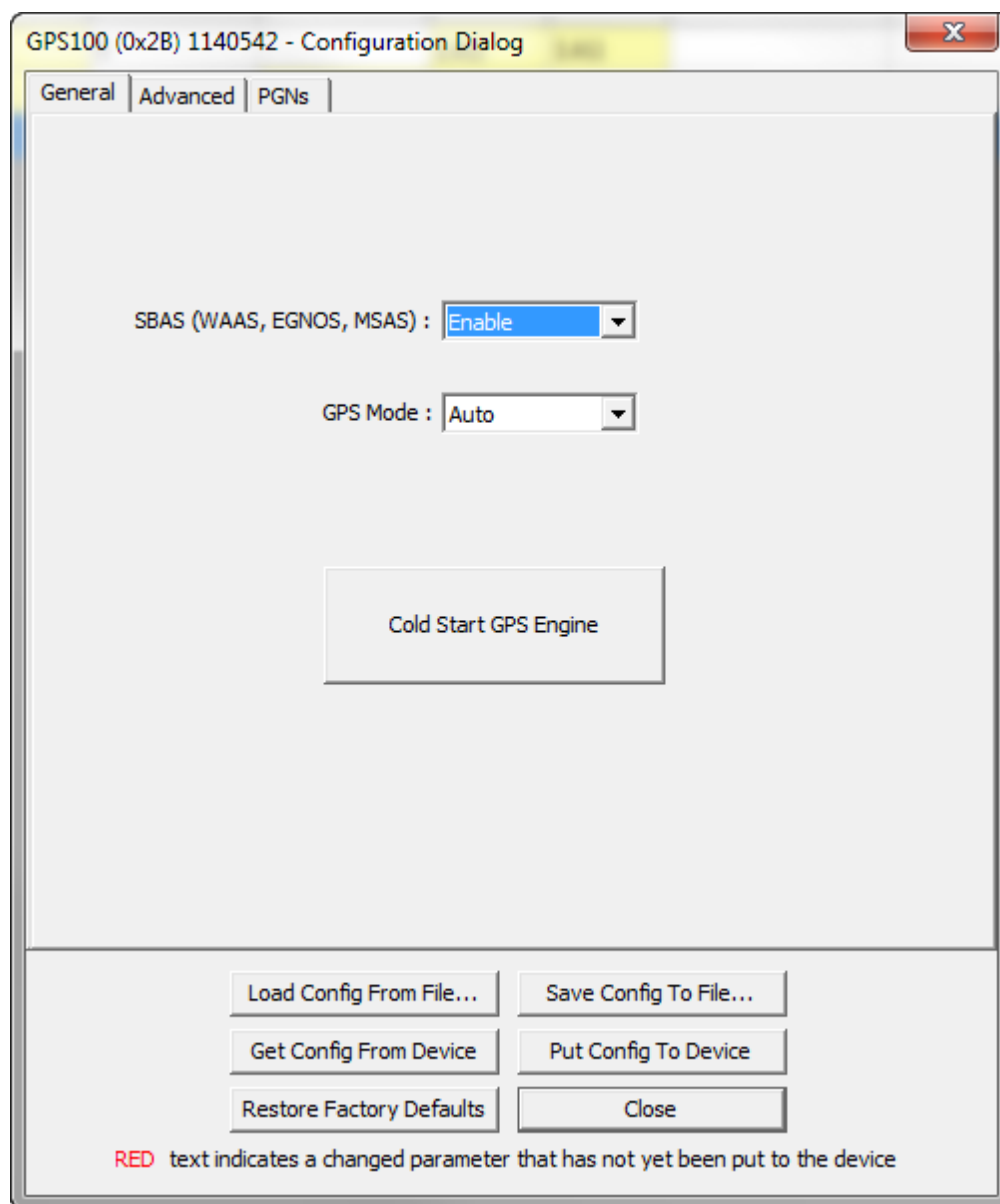


Figure 88 – GPS100 General Tab

SBAS (WAAS, EGNOS, MSAS)

The GPS200 may be programmed to use SBAS (WAAS) using the best available SBAS satellite (factory default). Alternatively, SBAS may be disabled.

GPS Mode

You may choose the desired operating mode for the GPS engine: 1D (time only), 2D, 3D, or best available (factory default).

Cold Start GPS Engine

Clicking this button will cause the GPS engine to restart, discarding all time, position, almanac, and ephemeris data.

5.20.2 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

The screenshot shows the 'GPS100 (0x2B) 1140542 - Configuration Dialog' window with the 'Advanced' tab selected. The window has three tabs: 'General', 'Advanced', and 'PGNs'. The 'Advanced' tab contains the following settings:

- Device Instance :** A numeric spinner set to 0.
- GPS Antenna Altitude :** A numeric spinner set to 0.00 m.
- GPS Elevation Mask :** A numeric spinner set to 7.5 °.
- GPS SNR Mask :** A numeric spinner set to 28.00 dB.
- GPS PDOP Mask :** A numeric spinner set to 0.

Below these settings, there is a note: "Set to 0 to disable the PDOP Switch." followed by two sections for installation descriptions:

- Installation Description #1 :** Two radio buttons are present: ☒ ASCII (English language only, Max. 70 characters) and ☐ Unicode (Max. 35 characters). Below the buttons is a large text input field.
- Installation Description #2 :** Two radio buttons are present: ☒ ASCII (English language only, Max. 70 characters) and ☐ Unicode (Max. 35 characters). Below the buttons is a large text input field.

At the bottom of the dialog, there are six buttons arranged in three rows:

- Row 1: 'Load Config From File...' and 'Save Config To File...'
- Row 2: 'Get Config From Device' and 'Put Config To Device'
- Row 3: 'Restore Factory Defaults' and 'Close'

At the very bottom, a red text label states: "RED text indicates a changed parameter that has not yet been put to the device".

Figure 89 – GPS100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

GPS Antenna Altitude

A user may specify an antenna altitude for use when the GPS100 is operating in 2D mode. As shipped from the factory, the GPS100 will use the altitude calculated when it was last operating in 3D mode.

GPS Elevation Mask

As shipped from the factory, the GPS100 uses all visible satellites in its position solution, regardless of the elevation (angle above the horizon). A user may specify a SV Elevation Mask, such that only satellites with an elevation greater than this value will be used in the position solution.

GPS SNR Mask

As shipped from the factory, the GPS100 will use all detectable satellites in its position solution, regardless of the signal-to-noise ratio (SNR). A user may specify a SNR mask, such that only satellites with an SNR greater than this value will be used in the position solution.

GPS PDOP Mask

as shipped from the factory, the GPS100 will report a GPS fix whenever possible, regardless of the value of position dilution of precision (PDOP). A user may specify a PDOP Mask, such that whenever the PDOP is above the specified value, the GPS100 will report that no GPS fix is available.

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-programmable installation description fields. You may program these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc. This configuration option will allow you to program the values of these fields.

5.20.3 PGNs Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGNs tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

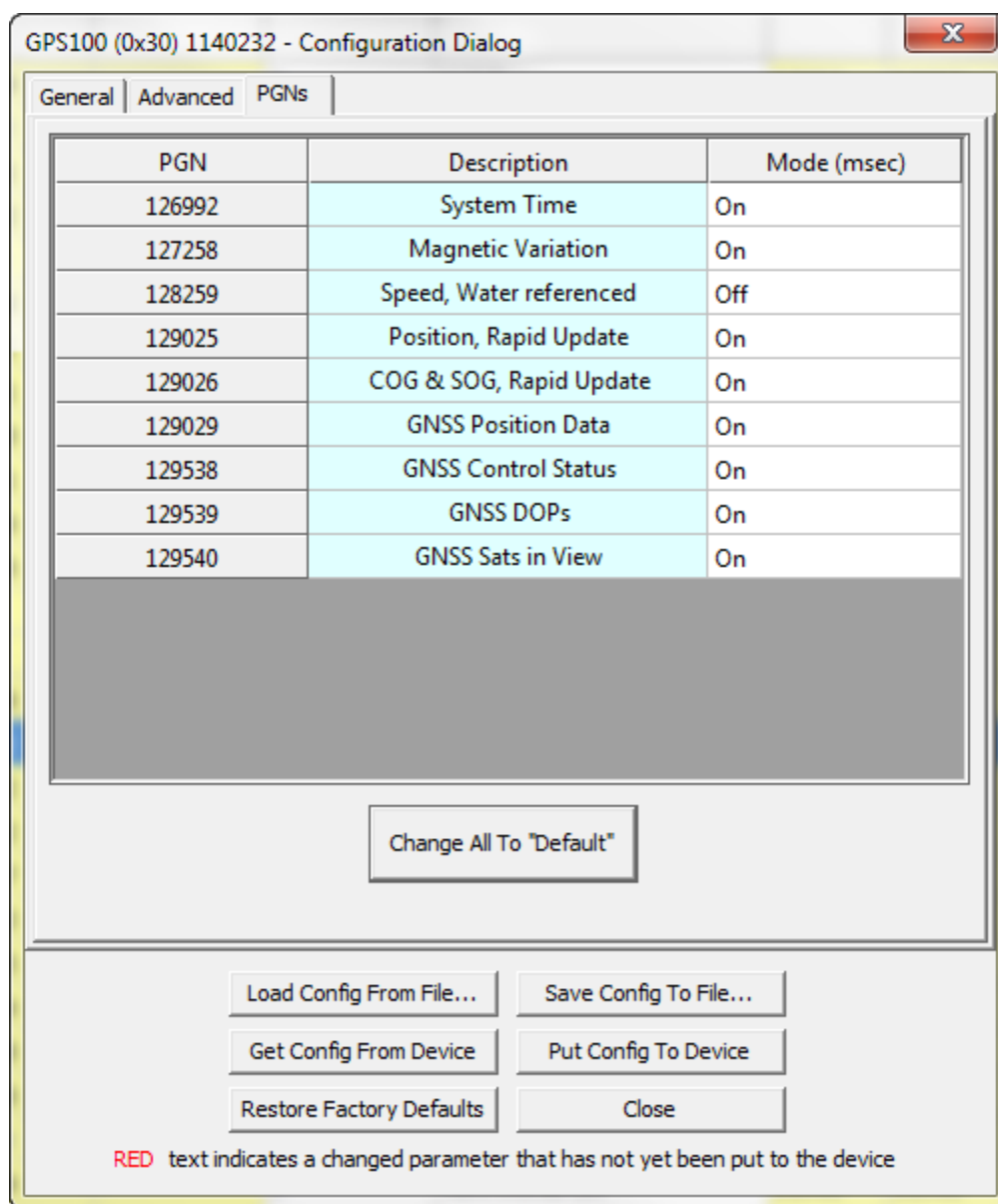


Figure 90 – GPS100 PGNs Tab

5.21 GPS200

5.21.1 General Tab

This tab contains commonly-used configuration items.

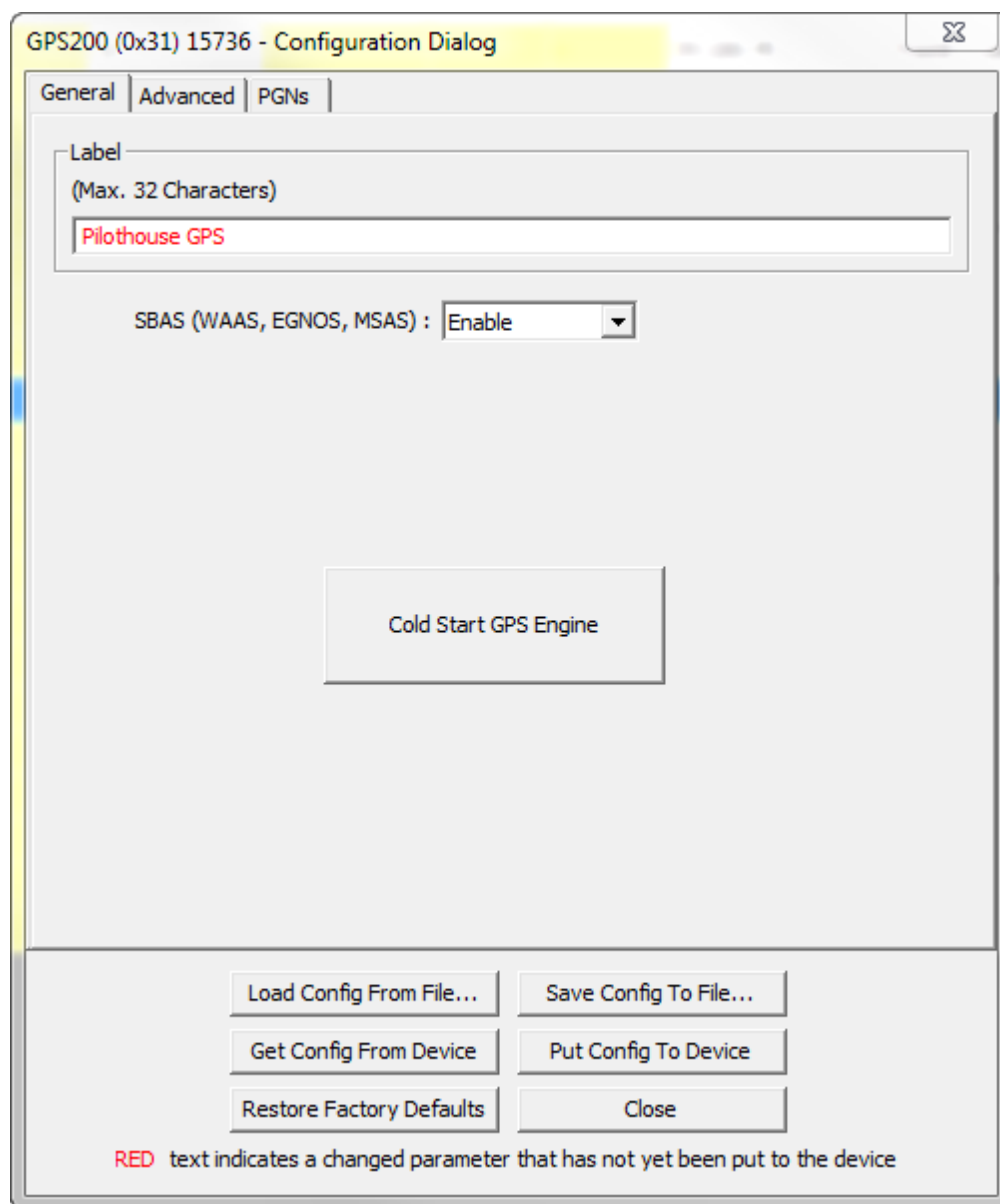


Figure 95 – GPS200 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

SBAS (WAAS, EGNOS, MSAS)

The GPS200 may be programmed to use SBAS (WAAS) using the best available SBAS satellite (factory default). Alternatively, SBAS may be disabled.

Cold Start GPS Engine

Clicking this button will cause the GPS engine to restart, discarding all time, position, almanac, and ephemeris data.

5.21.2 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

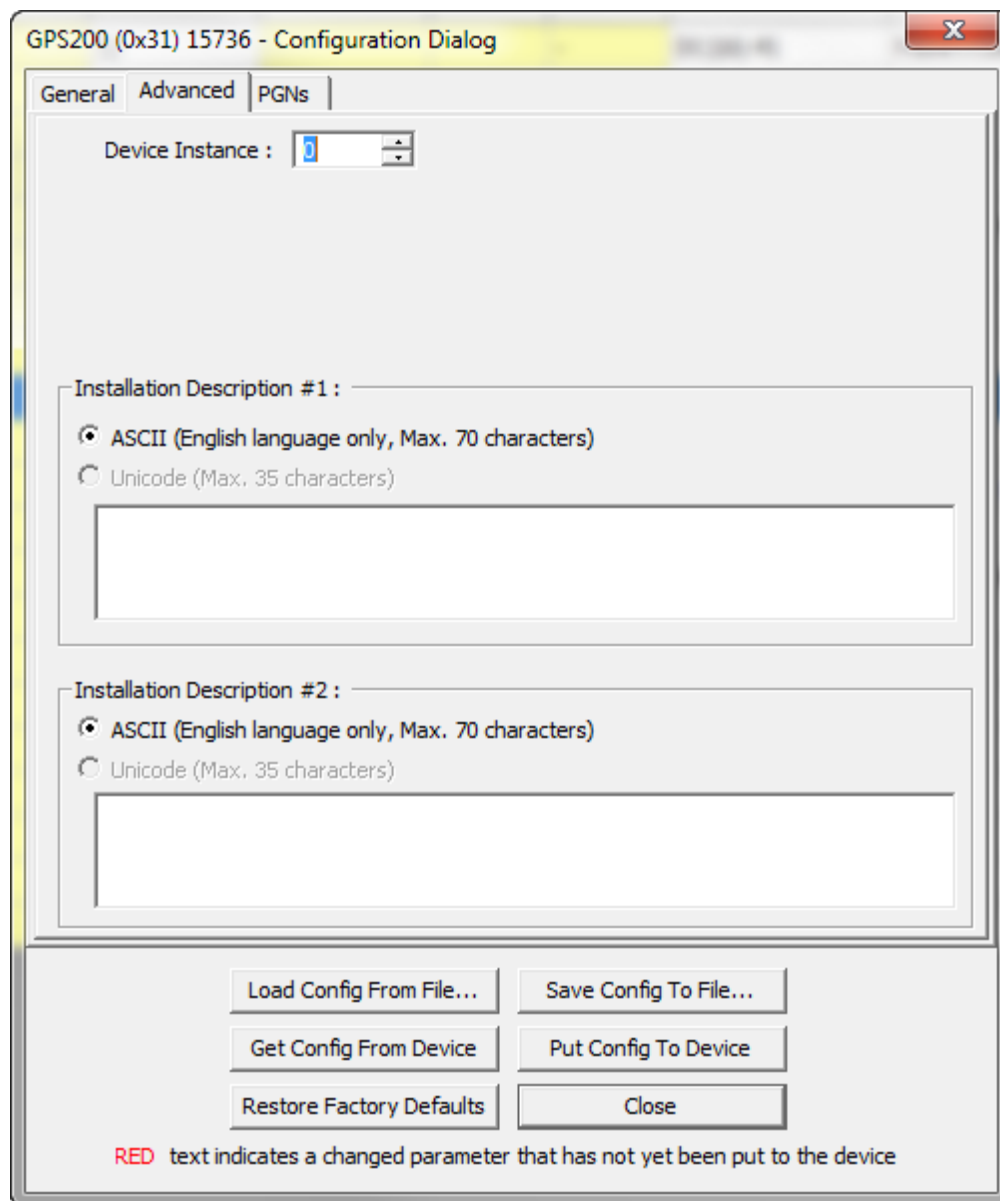


Figure 96 – GPS200 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry '*Installation Description*' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.21.3 PGNs Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGNs tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

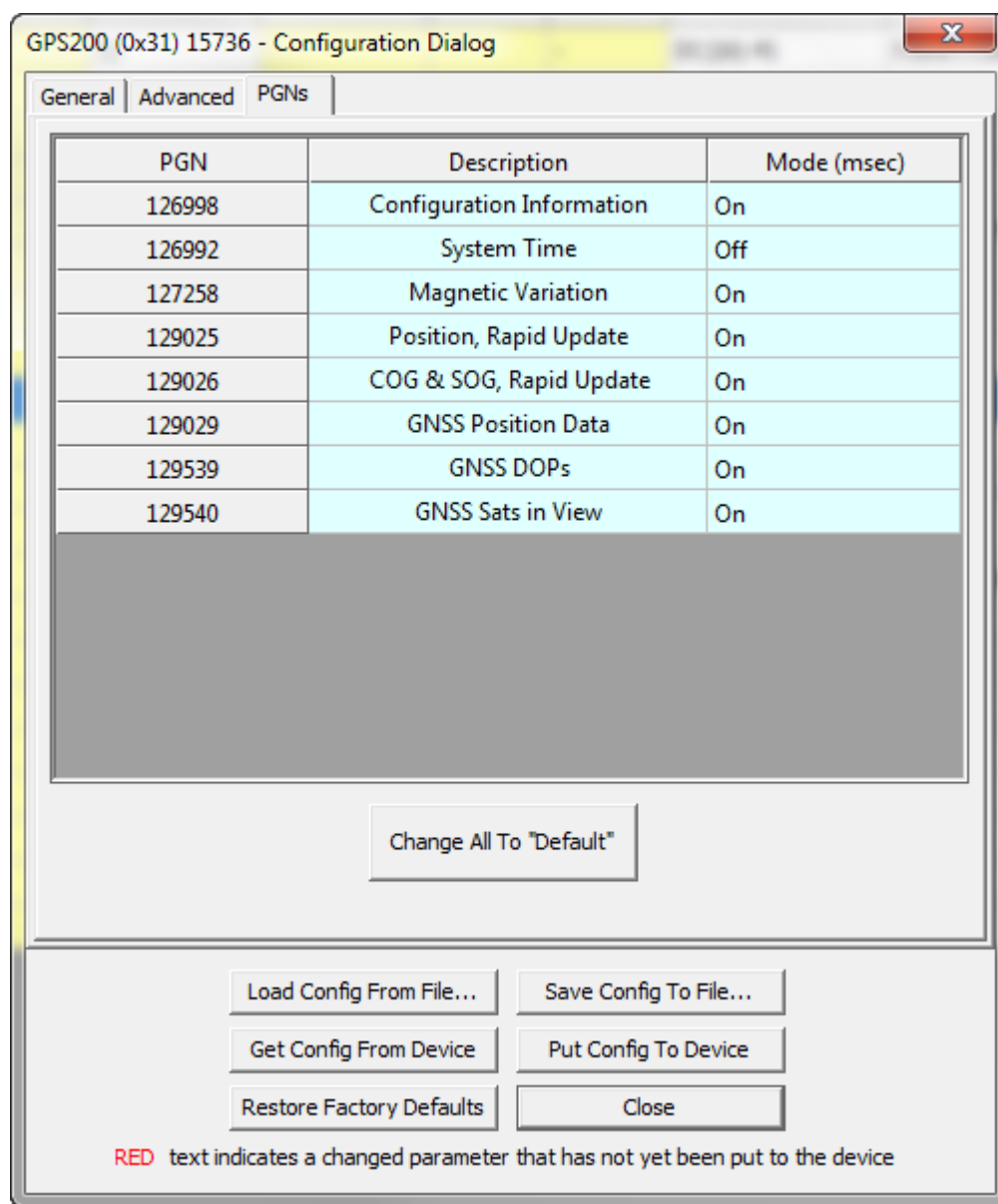
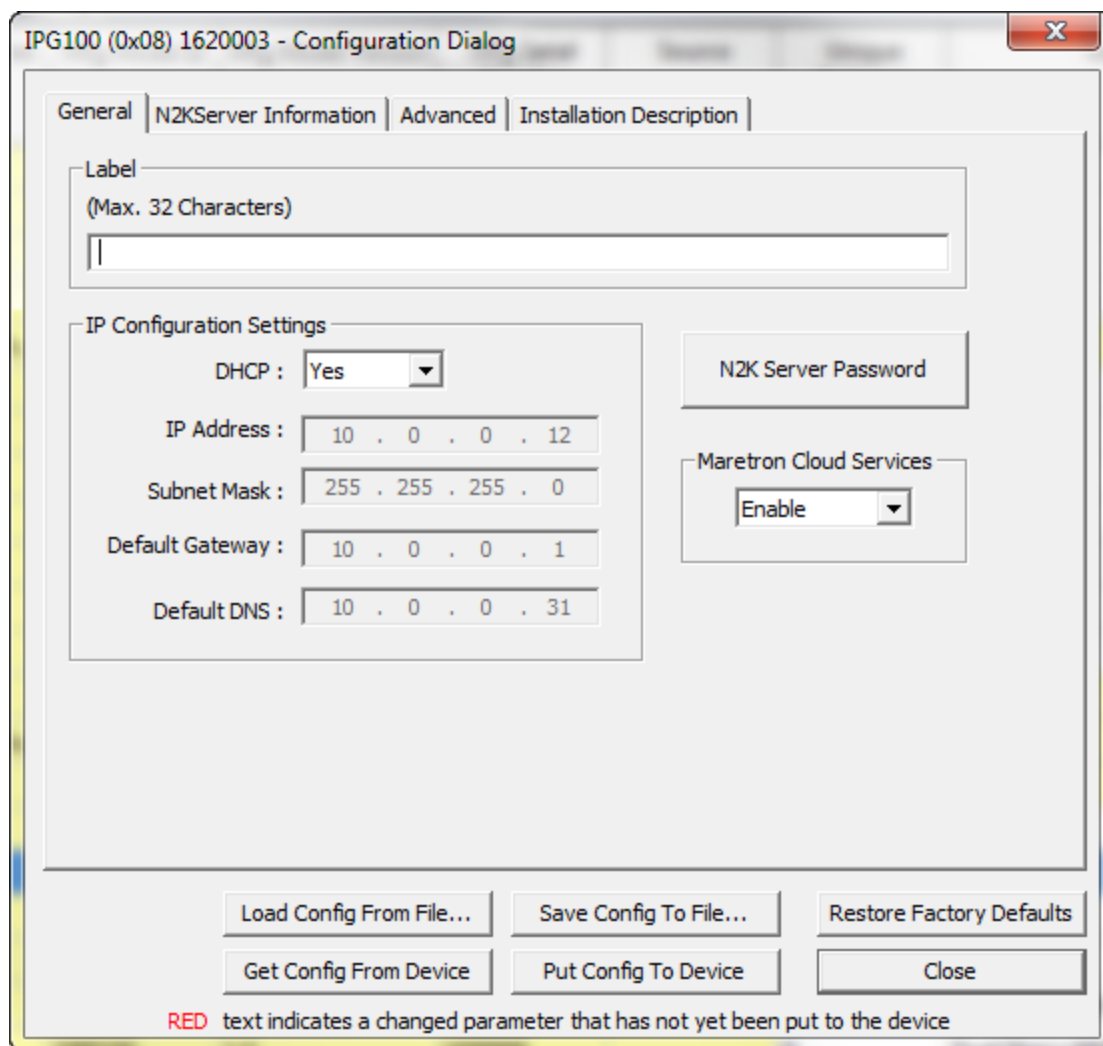


Figure 97 – GPS200 PGNs Tab

5.22 IPG100

5.22.1 General Tab

This tab contains commonly-used configuration items.



The image shows a configuration dialog box titled "IPG100 (0x08) 1620003 - Configuration Dialog". It has four tabs: "General", "N2KServer Information", "Advanced", and "Installation Description". The "General" tab is selected. Inside the dialog, there is a "Label" text box with the note "(Max. 32 Characters)". Below this is a section titled "IP Configuration Settings" which contains five fields: "DHCP" (a dropdown menu set to "Yes"), "IP Address" (10 . 0 . 0 . 12), "Subnet Mask" (255 . 255 . 255 . 0), "Default Gateway" (10 . 0 . 0 . 1), and "Default DNS" (10 . 0 . 0 . 31). To the right of these fields are two more sections: "N2K Server Password" (a text box) and "Maretron Cloud Services" (a dropdown menu set to "Enable"). At the bottom of the dialog are six buttons: "Load Config From File...", "Save Config To File...", "Restore Factory Defaults", "Get Config From Device", "Put Config To Device", and "Close". A red text note at the bottom left states: "RED text indicates a changed parameter that has not yet been put to the device".

Figure 91 – IPG100 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

DHCP

This parameter determines whether the IPG100 obtains its LAN connection settings from a DHCP server on the local area network. When set to "Yes" (the default value), the IPG100 will obtain all necessary connection settings (IP Address, Subnet Mask, Default Gateway, and Default DNS) from a DHCP server on the local area network. Most routers have the capability to act as a DHCP server. Consult the user documentation for your network's router for details.

If there is no DHCP server on the local area network (or if the IPG100 is connected directly to a DSM800, TSM800, TSM1330, or MBB100), set the "DHCP" parameter to "No" and manually configure the IP Address, Subnet Mask, Default Gateway, Default DNS.

IP Address

This parameter is the IP (Internet Protocol) address used by the IPG100. You will need to specify this address to N2Kview clients to allow them to connect to the IPG100. If the “DHCP” parameter is set to “Yes”, you do not need to configure this parameter. If the “DHCP” parameter is set to “No”, you will need to configure this parameter.

Subnet Mask

This is a mask used to divide an IP Address into subnets. Basically, it tells the computer how much of the IP Address defines the network, and how much may be used by computers on the network. For most networks, the first three parts of the IP address define the network (i.e., every computer on the network must have the same values), and the last part defines the computer (i.e., every computer on the network must have a different value). Where the value 255 appears in the subnet mask, the values define the network and must be the same.

The most common value is 255.255.255.0.

If the “DHCP” parameter is set to “Yes”, you do not need to configure this parameter. If the “DHCP” parameter is set to “No”, you will need to configure this parameter.

Default Gateway

This is the IP address of the router. If the “DHCP” parameter is set to “Yes”, you do not need to configure this parameter. If the “DHCP” parameter is set to “No”, you will need to configure this parameter.

Default DNS

This is the IP address of a computer on the Internet that can identify and locate computer systems and resources on the internet. In most cases, this should not be required by the IPG100 and may be left blank. If the “DHCP” parameter is set to “No”, you will need to configure this parameter.

N2Kserver Password

This button allows you to configure the password for the N2Kserver in the IPG100 that clients use to authenticate themselves to the N2Kserver, as shown in the figure below.

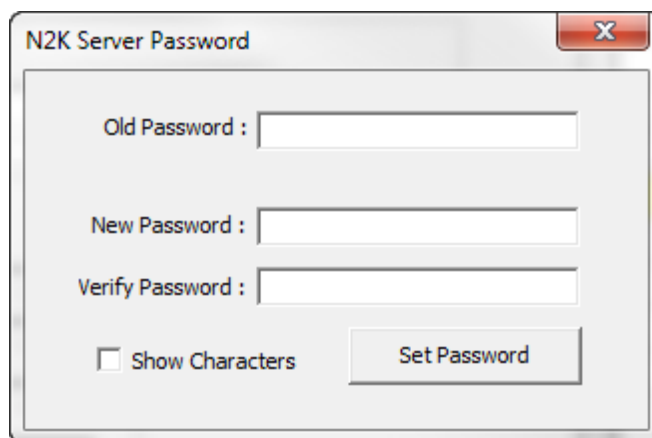


Figure 92 – IPG100 N2Kserver Password Tab

Old Password

Enter the current N2Kserver password in this text box.

New Password

Type the new N2Kserver password in this text box.

Verify Password

Retype the new N2Kserver password in this text box.

Show Characters

If you check this box, the passwords will be visible.

Set Password

Once you have typed in the old password and the new password, click this button to store the new password to the IPG100.

Maretron Cloud Services

This field allows you to enable Maretron Cloud Services for the IPG100 by setting it to “Enable”. If you do not subscribe to Maretron Cloud Services for this IPG100, then set this to “Disable”.

5.22.2 N2Kserver Information Tab

This tab displays information about the N2Kserver running on the IPG100

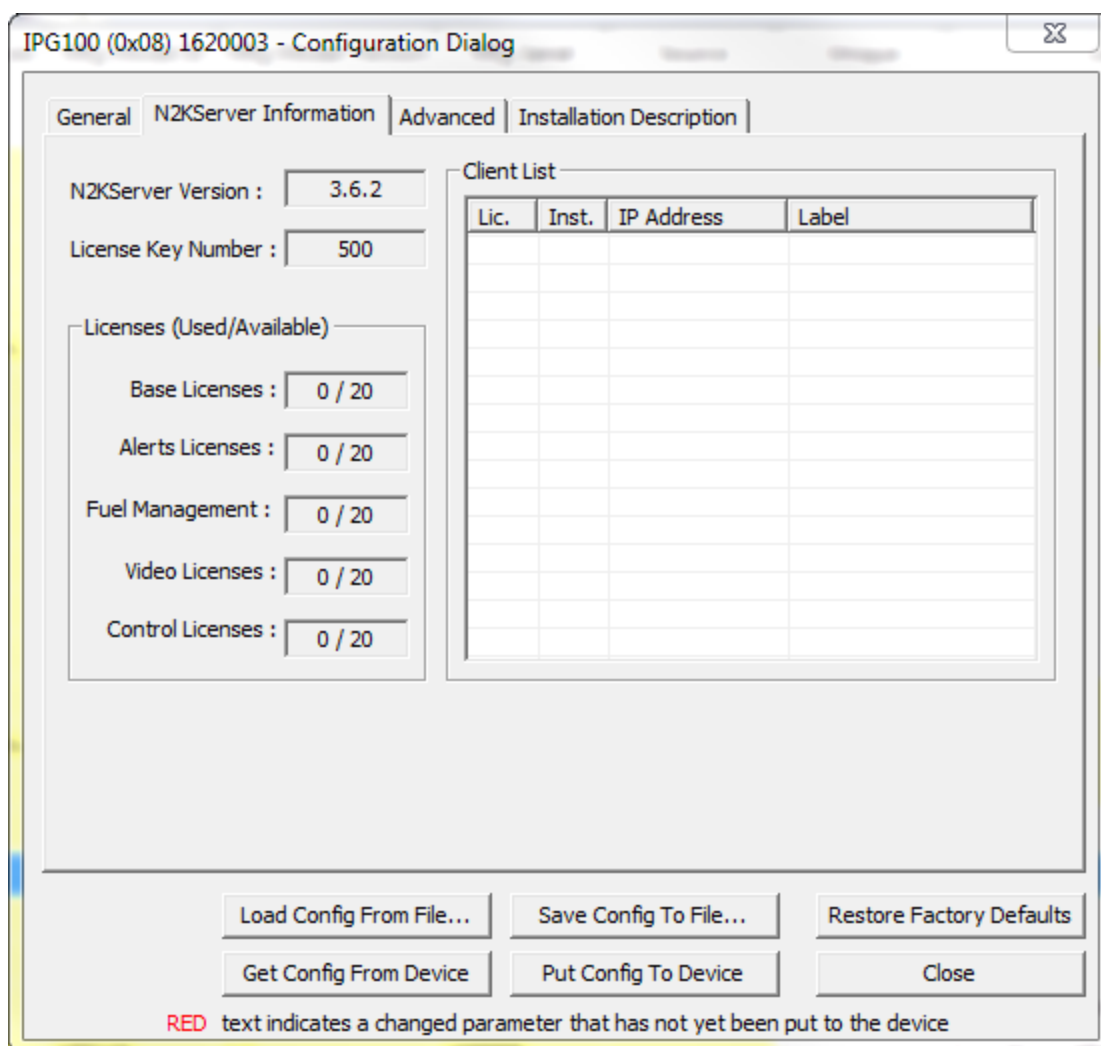


Figure 100 – IPG100 N2Kserver Information Tab

N2Kserver Version

This field displays the version number of the N2Kserver running on the IPG100.

License Key Number

This field displays the serial number of the hardware license key plugged into the IPG100.

Base Licenses

This field displays the number of base licenses in use, followed by the total number of base licenses.

Alerts License

This field displays the number of alerts licenses in use, followed by the total number of alerts licenses.

Fuel Management License

This field displays the number of fuel management licenses in use, followed by the total number of fuel management licenses.

Video License

This field displays the number of video licenses in use, followed by the total number of video licenses.

Control License

This field displays the number of control licenses in use, followed by the total number of control licenses.

Client List

This window shows a summary of the clients currently connected to the IPG100.

The following fields are displayed:

- Lic. – This field displays the type of license used: “P” for Platinum, or “B” for Basic.
- Inst. – This field displays the instance number assigned to the client
- IP Address – This field displays the IP address of the connected client
- Label – This field shows the Label assigned to the connected client

5.22.3 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

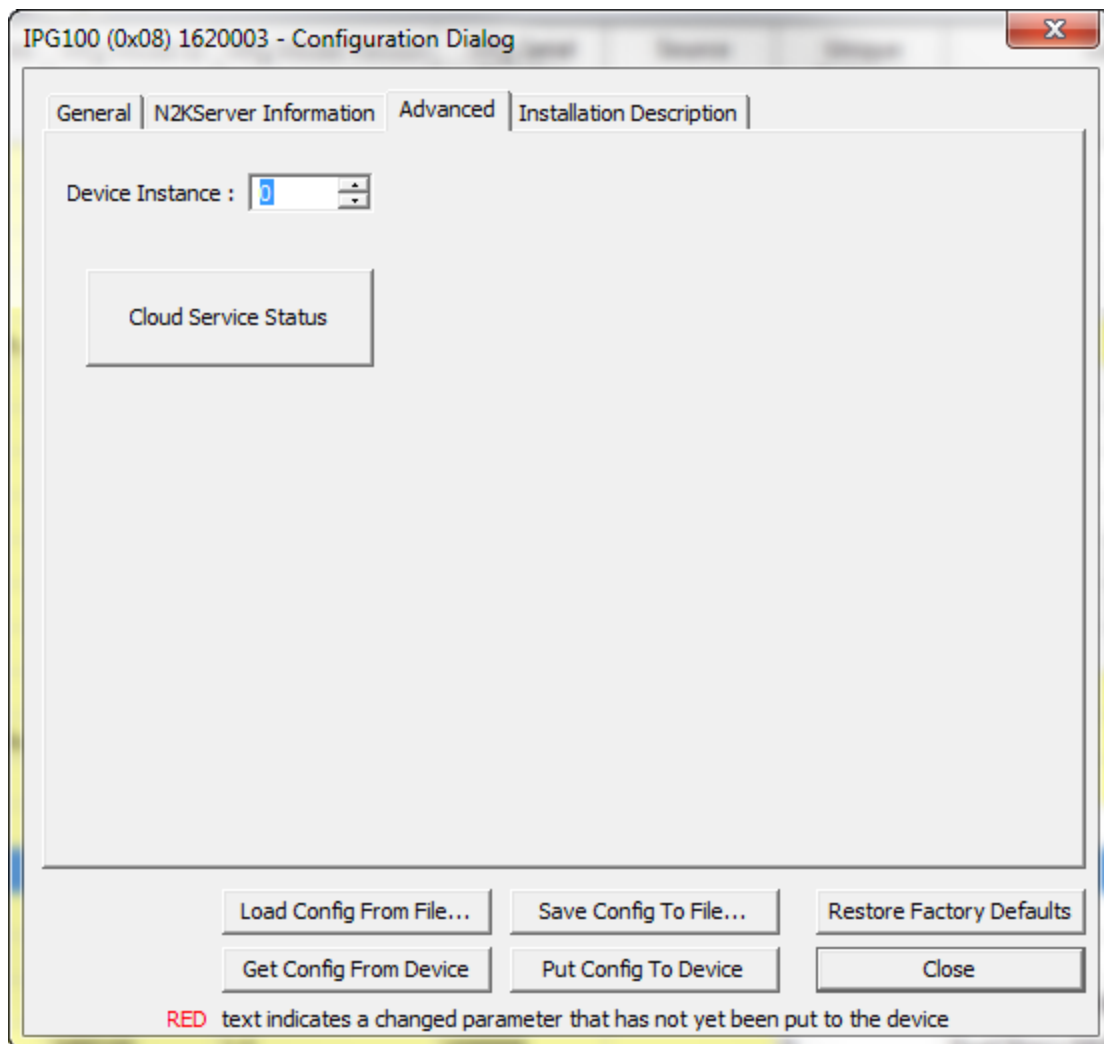


Figure 93 – IPG100 Advanced Tab

5.22.4 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

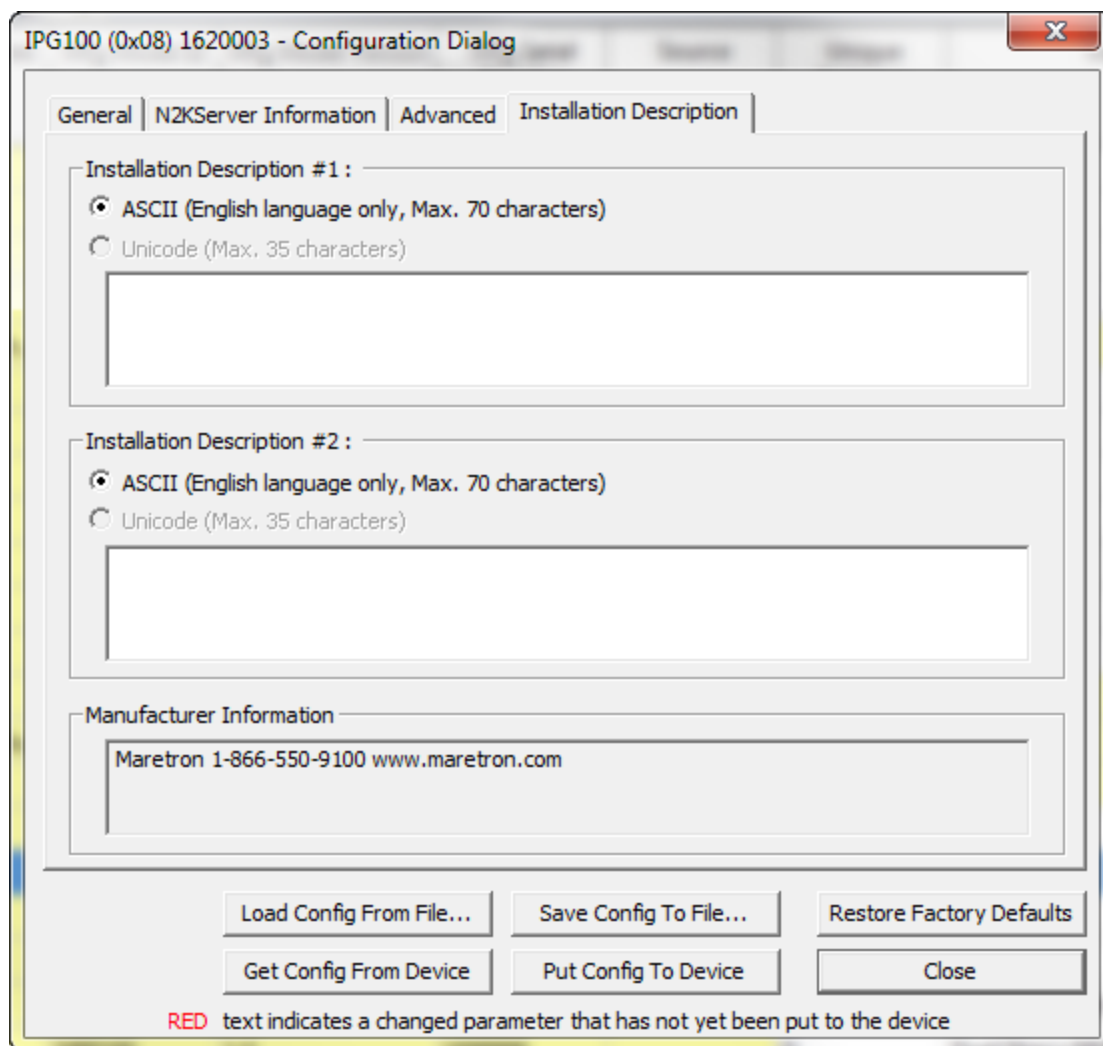


Figure 94 – IPG100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.23 J2K100

5.23.1 General Tab

This tab contains commonly-used configuration items.

The screenshot shows a software window titled "J2K100 (0xA6) 1247876 - Configuration Dialog - J2K100". It has three tabs: "General", "Advanced", and "PGNs", with "General" selected. The "General" tab contains the following elements:

- A "Label" field with the text "(Max. 32 Characters)" and the value "Main Engine".
- A section titled "NMEA 2000 Data Instances" containing three spinners:
 - "Engine :" with value 0
 - "Transmission :" with value 0
 - "Air Conditioning/Icemaker :" with value 0
- A "J1939 Source Address to convert to NMEA 2000:" spinner with value 3.
- A "Source addresses detected on J1939 network:" spinner with value 3 and a "Refresh List" button.
- A grid of buttons at the bottom:
 - Load Config From File...
 - Save Config To File...
 - Get Config From Device
 - Put Config To Device
 - Restore Factory Defaults
 - Close

At the bottom of the window, a red text note states: "RED text indicates a changed parameter that has not yet been put to the device".

Figure 95 – J2K100 General Tab

5.23.2 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

J2K100 (0xA6) 1247876 - Configuration Dialog - J2K100

General | **Advanced** | PGNs

Device Instance (AC Generator): J1939 Diagnostic Messages:

Request Engine Hours:

Data Damping

Fuel Rate: sec Tachometer: sec

Installation Description #1:

☒ ASCII (English language only, Max. 70 characters)
☐ Unicode (Max. 35 characters)

Installation Description #2:

☒ ASCII (English language only, Max. 70 characters)
☐ Unicode (Max. 35 characters)

MARETRON

Load Config From File... Save Config To File...
Get Config From Device Put Config To Device
Restore Factory Defaults Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 96 – J2K100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

J1939 Diagnostic Messages

The J2K100 can optionally pass through J1939 diagnostic messages, used to indicate fault conditions on engines and transmissions, from the J1939 interface to the NMEA 2000 network so that NMEA 2000 connected displays can interpret these diagnostic codes.

Request Engine Hours

Some J1939 ECU's will not transmit engine hours unless they are requested to do so by another device on the J1939 network. If this setting is enabled, then the J2K100 will periodically transmit a request for the engine hours message to the J1939 ECU over the J1939 network. This is the only time the J2K100 will transmit messages over the J1939 network. If this setting is disabled, then the J2K100 will not transmit any messages over the J1939 network.

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry '*Installation Description*' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.23.3 PGNs Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGNs tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

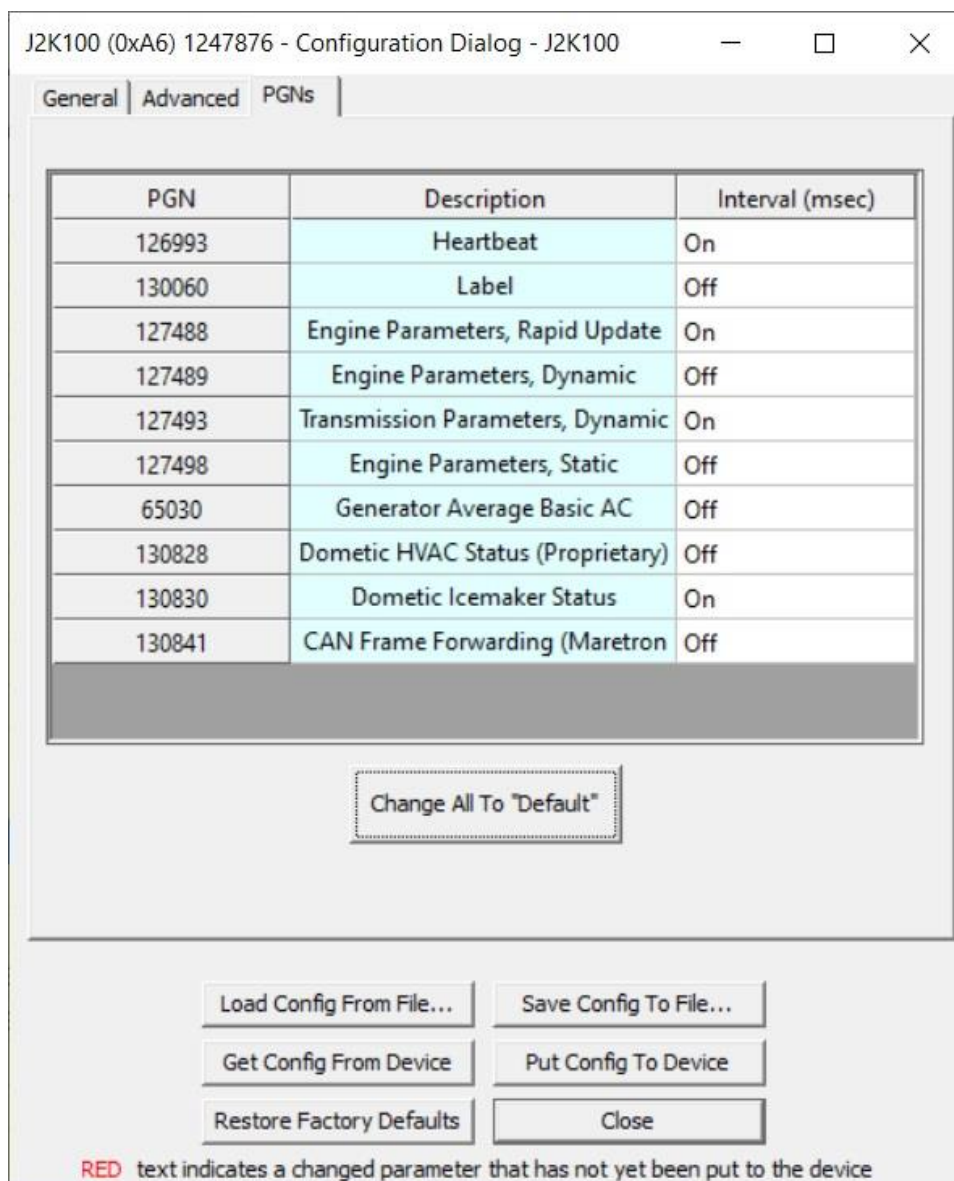


Figure 97 – J2K100 PGNs Tab

5.24 NBE100

5.24.1 General Tab

The “General Tab” for the NBE100 features a blank field for entering a Label. Enter any Label desired in the field such as the NBE100’s location on the vessel or an NBE100 reference number such as “Box 2”. See example below of the “General Tab”.

The screenshot shows a software window titled "General" with tabs for "General", "Advanced", "PGN Filter", and "Installation Description". The "General" tab is active. It contains a "Label" field with the text "(Max. 32 Characters)" and an empty text input box below it. At the bottom of the window, there are six buttons: "Load Config From File...", "Save Config To File...", "Restore Factory Defaults", "Get Config From Device", "Put Config To Device", and "Close". Below the buttons, a red text note states: "RED text indicates a changed parameter that has not yet been put to the device".

Figure 98 – NBE100 General Tab

5.24.2 Advanced Tab

In the “Advanced Tab” there is a field for Device Instance. NMEA 2000 provides a unique device instance for each device on a vessel. This value should be configured in each NBE100 so that each NBE100 is associated with a unique device instance number. The default instance number is 0, which is used to indicate the first NBE100 that is hooked to the network. Subsequent NBE100's connected to the network would be numbered 1, 2, and so on. See preceding figure of the NBE100 Advanced Tab containing this field.

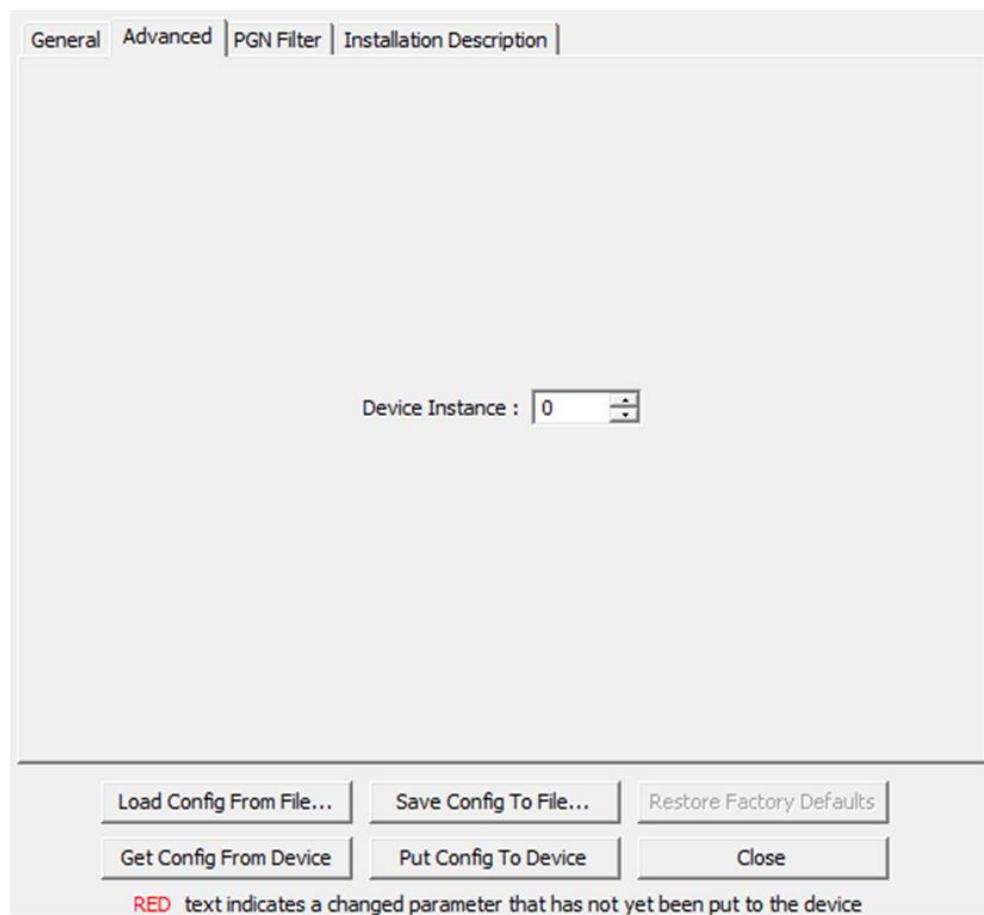


Figure 99 – NBE100 Advanced Tab

5.24.3 PGN Filter Tab

The NBE100 has a feature with which only certain messages will be passed from one port to the other, as opposed to the default state, in which all messages are passed between both ports. Messages to be passed are selected on the basis of the Parameter Group Numbers (PGN's) of the messages. This is useful for passing only certain information from the NMEA 2000 network on one port of the NBE100 to the NMEA 2000 network on the other port.

If the PGN Filter is enabled the NBE100 will filter all PGNs except for the PGNs entered into the "Exception Field". Where "CAN1" refers to the NBE100's "N2K Port A" and "CAN2" refers to the NBE100's "N2K Port B", the PGN Filter can filter PGNs traveling from CAN1 to CAN2, CAN2 to CAN1 or PGNs traveling both directions. To enable PGN Filtering, select "Enable" in the drop-down box located under the desired PGN traveling direction to be filtered. To enable PGN filtering exceptions, enter the PGN number into the "PGN" field located under the "Filter Enabled" dialog. See example of the NBE100 PGN Filter Tab in the preceding figure for example of this feature.

General | Advanced | **PGN Filter** | Installation Description

CAN1->CAN2

Filter **Enabled**

PGN	Description
127489	Engine Parameters,

CAN2->CAN1

Filter Disabled

PGN	Description

Load Config From File...

Save Config To File...

Restore Factory Defaults

Get Config From Device

Put Config To Device

Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 100 NBE PGN Filter Tab

5.24.4 Installation Description Tab

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

The screenshot shows the 'Installation Description' tab of the N2KAnalyzer V3 software. The tab is divided into three main sections: 'Installation Description #1', 'Installation Description #2', and 'Manufacturer Information'. Each of the first two sections contains two radio buttons: 'ASCII (English language only, Max. 70 characters)' (selected) and 'Unicode (Max. 35 characters)'. Below each set of radio buttons is a large text area for input. The 'Manufacturer Information' section contains a single text area with the text 'Maretron 1-866-550-9100 www.maretron.com'. At the bottom of the window, there are six buttons: 'Load Config From File...', 'Save Config To File...', 'Restore Factory Defaults', 'Get Config From Device', 'Put Config To Device', and 'Close'. A red text label at the bottom left of the window states: 'RED text indicates a changed parameter that has not yet been put to the device'.

Figure 101 NBE100 Installation Description Tab

5.25 RAA100

5.25.1 General Tab

This tab contains commonly-used configuration items. Configure the rudder data's unique instance number in the *Rudder Number* dialog and whether the *Operating Mode* is strictly NMEA 2000 or if there is also an analog gauge attached.

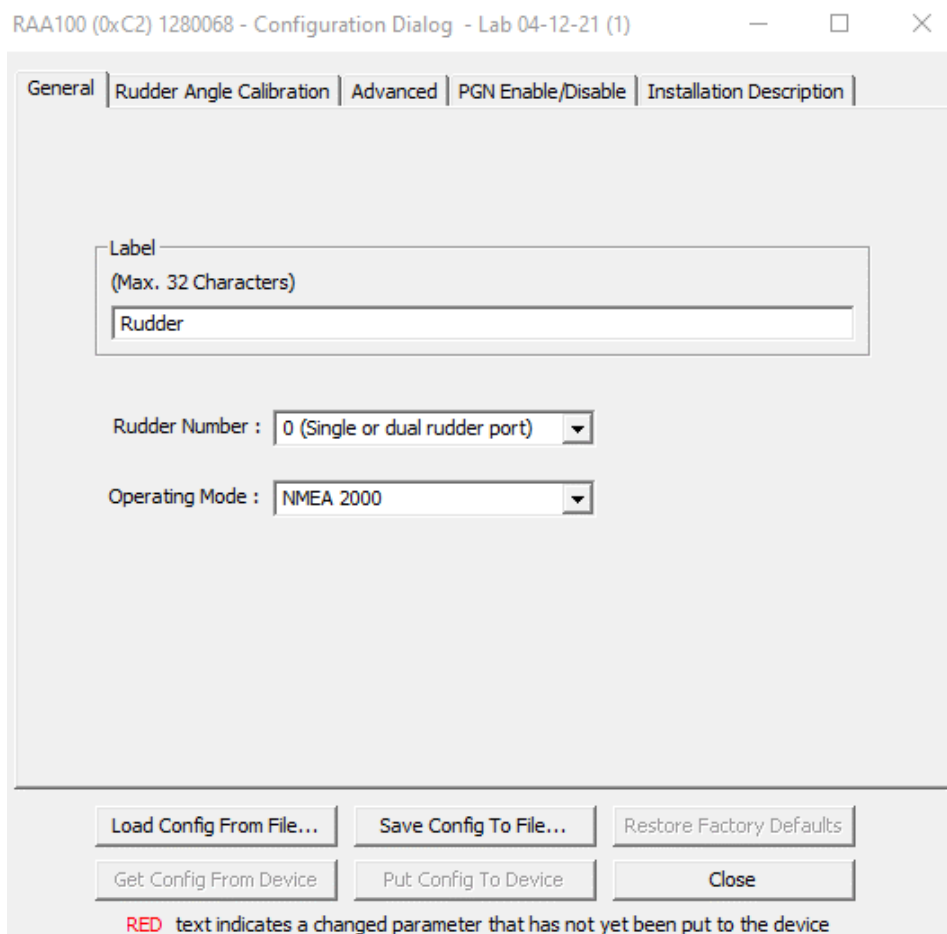


Figure 102 – RAA100 General Tab

5.25.2 Rudder Angle Calibration Tab

This tab allows you to calibrate the RAA100 for the rudder and rudder sensor installation. You will move the rudder to three positions: hard starboard, center, and hard port.

To start the calibration, move the rudder to hard starboard, measure the position of the rudder (deviation in degrees from the center position), enter this position into the box at the top of the screen, and click the “Calibrate Starboard” button.

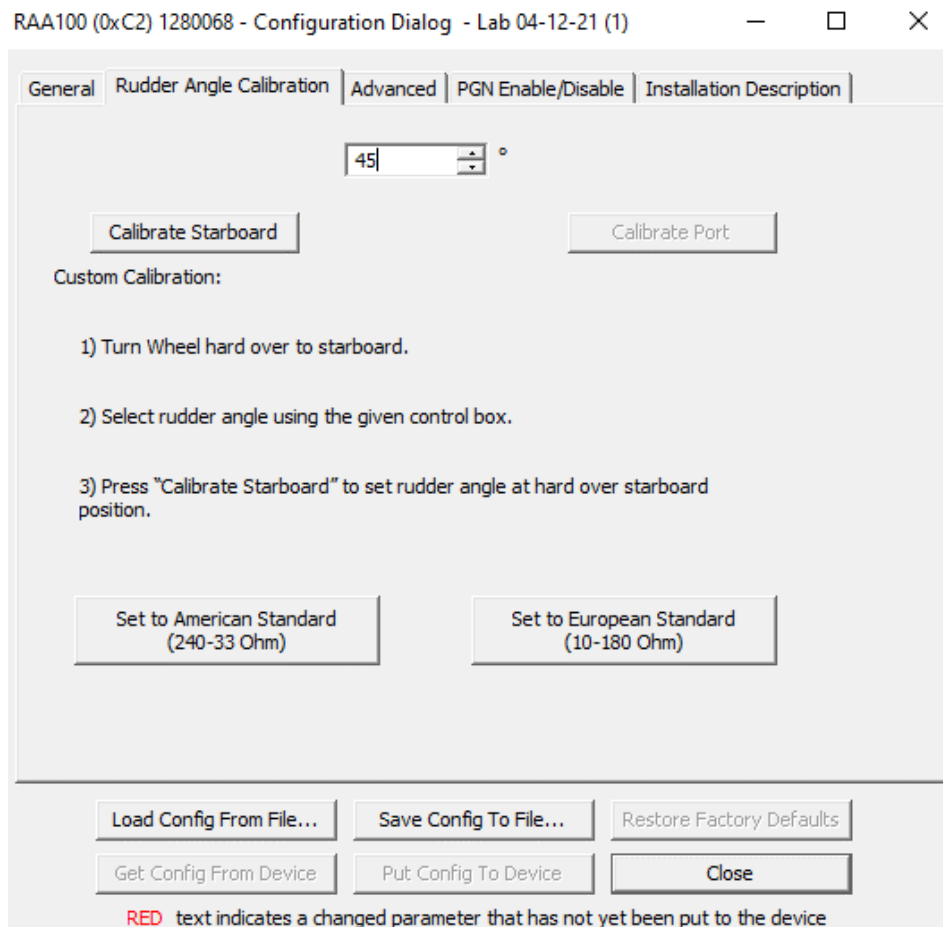


Figure 103 – RAA100 Rudder Angle Calibration Tab (First Step)

Once you have clicked the “Calibrate Starboard” button, the following dialog will appear. Move the rudder to the center position and click the “OK” button.

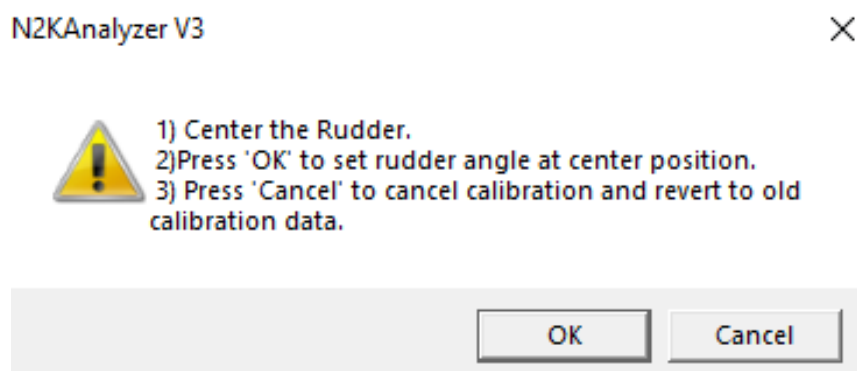


Figure 104 – RAA100 Rudder Angle Instructions Dialog Box (Second Step)

Now, move the rudder to hard port, measure the rudder angle (deviation from the center angle in degrees), type this into the box at the top of the screen, and click the “Calibrate Port” button.

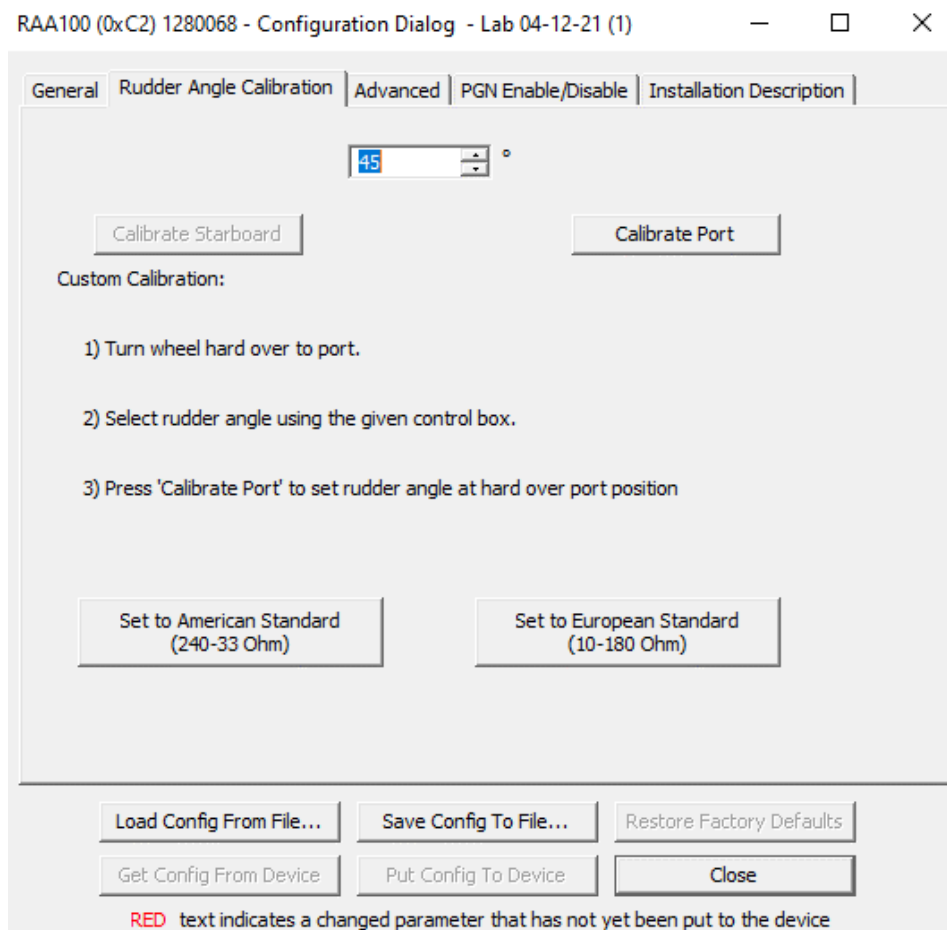


Figure 105 – RAA100 Rudder Angle Calibration Tab (Third Step)

The rudder angle calibration is now complete. You may alternatively select the “American Standard” or “European Standard” options if your rudder sensor matches one of those resistance curves and the hard port and hard starboard positions are 45° from the center position.

5.25.3 Advanced Tab

If there are multiple instances of this device on a network the Device Instance would need to be changed. Change the device’s NMEA 2000 Instance Number within this dialog.

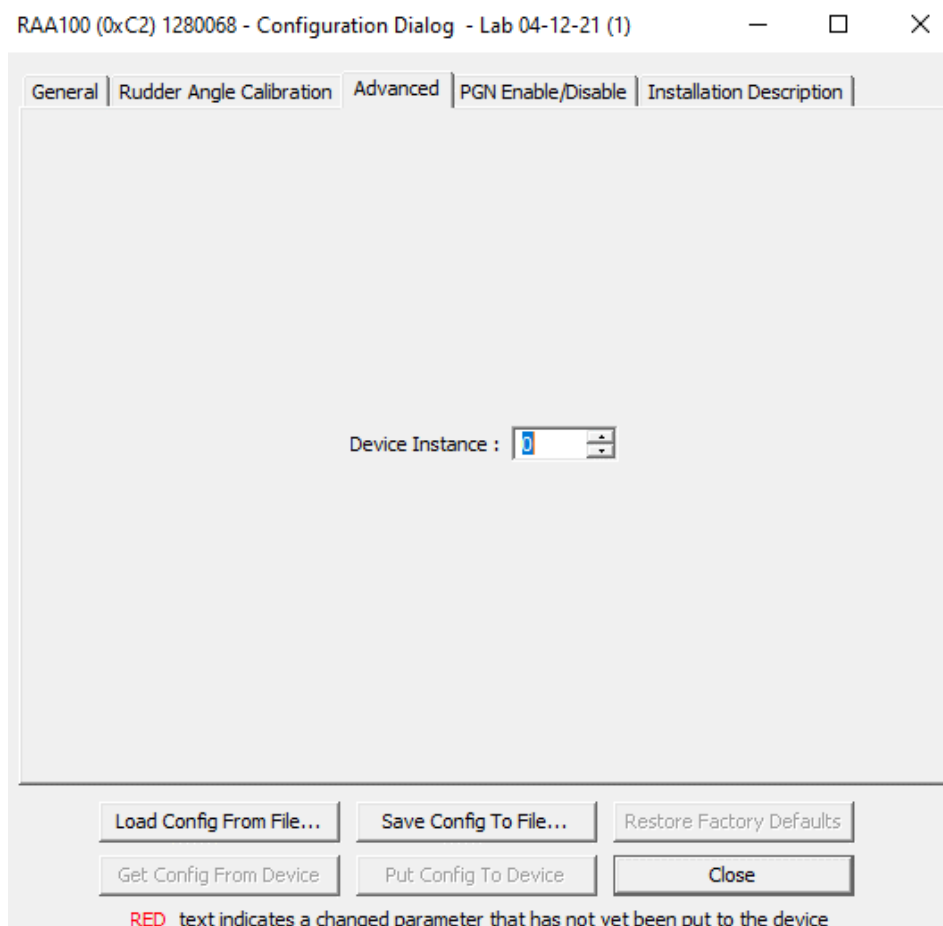


Figure 106 – RAA100 Advanced Tab

5.25.4 PGN Enable / Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may configure the time interval between transmissions of a specific message.

When you first open the PGN Enable / Disable tab, a list of periodic PGN's transmitted by the device will appear. The *Interval* column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

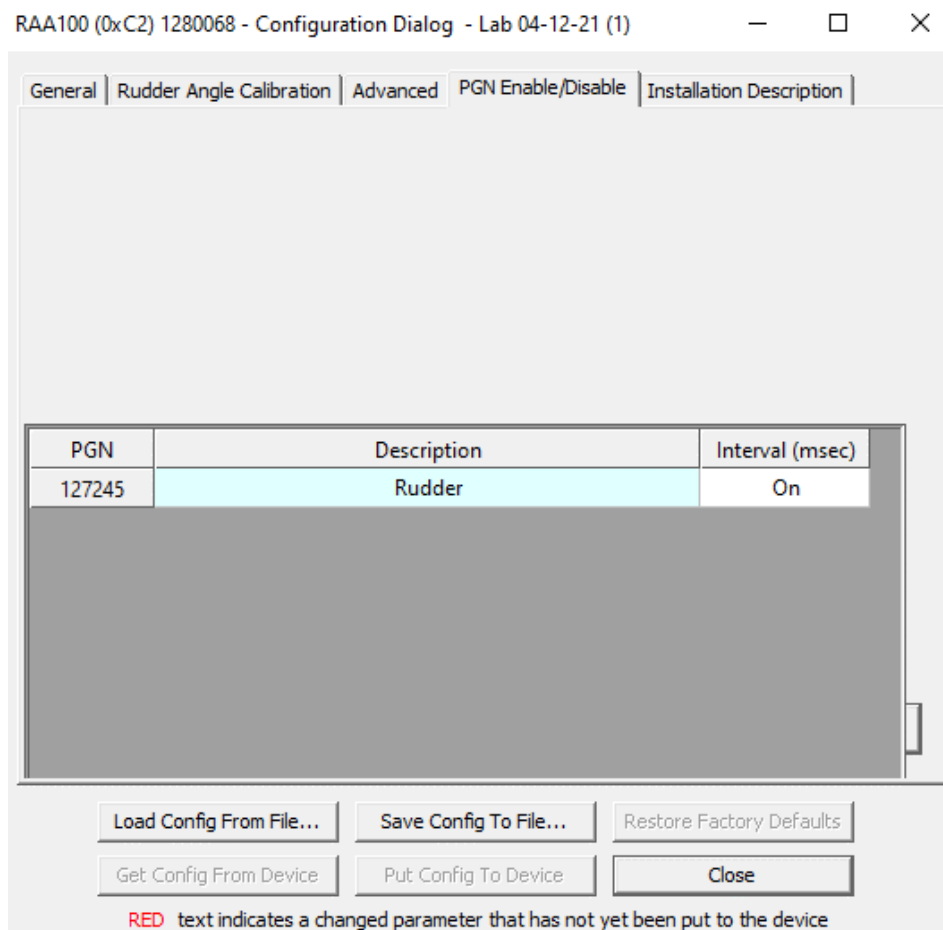


Figure 107 – RAA100 PGNs Tab

5.25.5 Installation Description Tab

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.26 RIM100

5.26.1 General Tab

This tab contains commonly-used configuration items.

RIM100 (0xDF) 1459901 - Configuration Dialog

General | Counters/Timers | Advanced | PGN Enable/Disable | Installation Description

Label
(Max. 32 Characters)
RUN MONITOR

Instance : 0

Channel #1
Mode : Enable
Label : ANCHOR WINCH

Channel #2
Mode : Enable
Label : RUNNING LIGHTS

Channel #3
Mode : Enable
Label : AFT BILGE PUMP

Channel #4
Mode : Enable
Label : FORWARD BILGE PUMP

Channel #5
Mode : Enable
Label : ENGINE ROOM LIGHTS

Channel #6
Mode : Enable
Label : GENSET

Load Config From File... Save Config To File... Restore Factory Defaults
Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 108 – RIM100 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Instance

This field identifies the switch bank to which this PGN applies.

Channel #x Mode

You may enable or disable each channel.

Channel #x Label

Each channel has a text label you can set to identify the circuit monitored by that channel (for example, “BILGE PUMP” or “RUNNING LIGHTS”). For each channel, set this to a value which describes the circuit being monitored so that you can easily identify it in display devices.

5.26.2 Counters/Timers Tab

This tab contains controls to view the state of and to reset the hardware counters and timers in the RIM100.

RIM100 (0xD0) 1439999 - Configuration Dialog

General | **Counters/Timers** | Advanced | PGN Enable/Disable | Installation Description

Channel #1

Counters

Since: 10-12-2015 18:40:37

OFF: 2

ON: 2

ERROR: 0

Reset

Timers

Since: 10-12-2015 18:40:35

OFF: 00:00:32

ON: 00:00:00

ERROR: 00:00:00

Reset

Channel #2

Counters

Since: 10-12-2015 18:40:38

OFF: 1

ON: 2

ERROR: 0

Reset

Timers

Since: 10-12-2015 18:40:39

OFF: 00:00:14

ON: 00:00:15

ERROR: 00:00:00

Reset

Channel #3

Counters

Since: 10-12-2015 18:40:40

OFF: 3

ON: 3

ERROR: 0

Reset

Timers

Since: 10-12-2015 18:40:40

OFF: 00:00:27

ON: 00:00:01

ERROR: 00:00:00

Reset

Channel #4

Counters

Since: 10-12-2015 18:40:45

OFF: 2

ON: 3

ERROR: 0

Reset

Timers

Since: 10-12-2015 18:40:46

OFF: 00:00:13

ON: 00:00:09

ERROR: 00:00:00

Reset

Channel #5

Counters

Since: 10-12-2015 18:40:44

OFF: 2

ON: 2

ERROR: 0

Reset

Timers

Since: 10-12-2015 18:40:44

OFF: 00:00:22

ON: 00:00:02

ERROR: 00:00:00

Reset

Channel #6

Counters

Since: 10-12-2015 18:40:42

OFF: 3

ON: 4

ERROR: 0

Reset

Timers

Since: 10-12-2015 18:40:43

OFF: 00:00:23

ON: 00:00:02

ERROR: 00:00:00

Reset

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 109 – RIM100 Counters/Timers Tab

Each channel of the RIM100 maintains counters that track how many times the channel has transitioned into each of the states OFF, ON, and ERROR. The “Counters” section of this dialog for each channel has the following fields:

- **Since:** the time and date that the channel’s counter was last reset (this requires that a source of time and date, usually a GPS receiver, be present on the NMEA 2000 network).
- **OFF:** the number of times that this channel has transitioned into the OFF state since the channel’s counters were last reset.
- **ON:** the number of times that this channel has transitioned into the ON state since the channel’s counters were last reset.

- **ERROR:** the number of times that this channel has transitioned into the ERROR state since the channel's counters were last reset.
- **Reset:** Pressing this button will reset the OFF, ON, and ERROR counters to zero values, and will update the "Since:" field for this channel's counters to the current time and date.

Each channel of the RIM100 maintains timers of the elapsed time that the channel has spent in each of the states OFF, ON, and ERROR. The "Timers" section of this dialog for each channel has the following fields:

- **Since:** the time and date that the channel's timer was last reset (this requires that a source of time and date, usually a GPS receiver, be present on the NMEA 2000 network).
- **OFF:** the elapsed time that this channel has been in the OFF state since the channel's timer were last reset.
- **ON:** the elapsed time that this channel has been in the ON state since the channel's timers were last reset.
- **ERROR:** the elapsed time that this channel has been in the ERROR state since the channel's timers were last reset.
- **Reset:** Pressing this button will reset the OFF, ON, and ERROR timers to zero values, and will update the "Since:" field for this channel's timers to the current time and date.

5.26.3 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

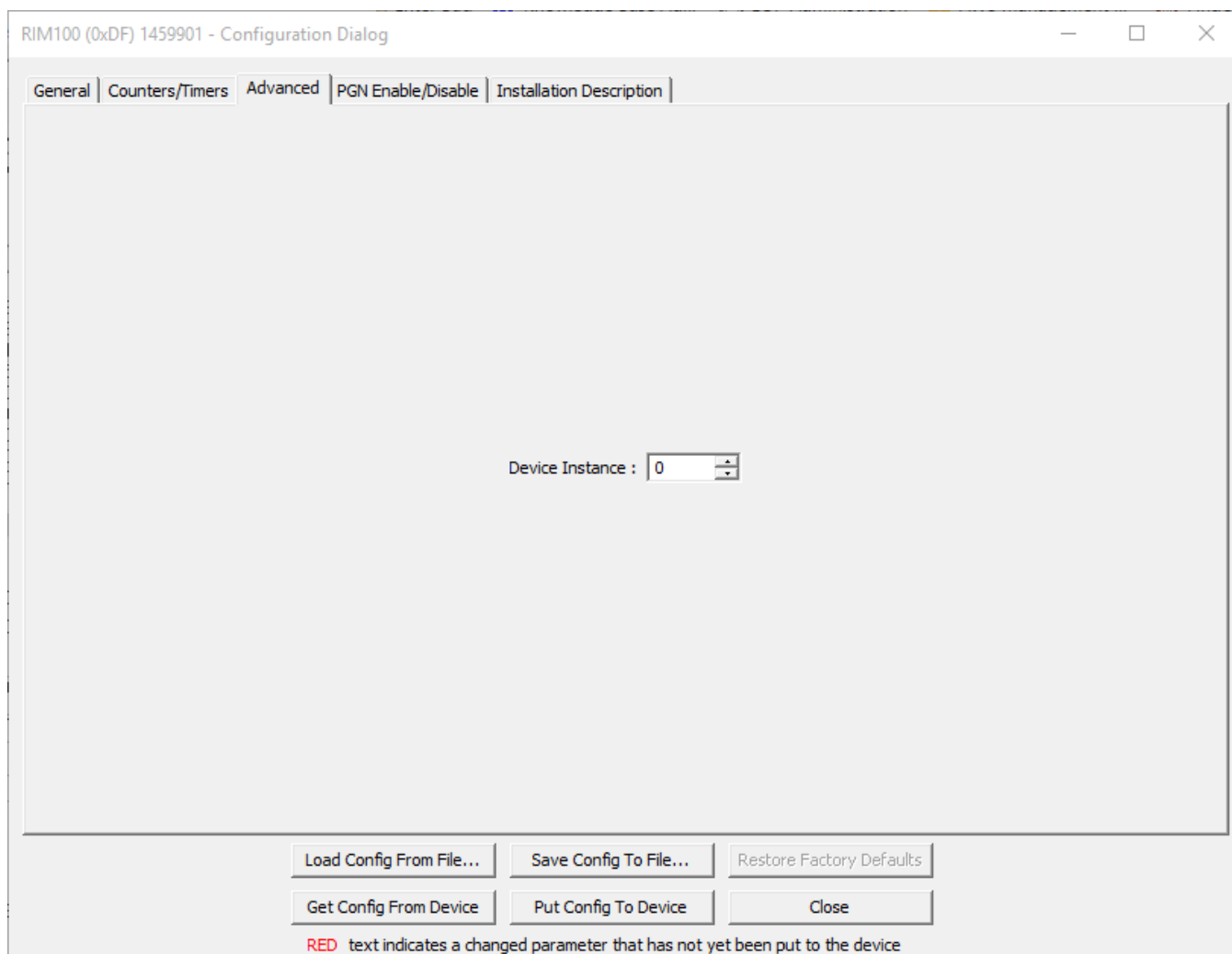


Figure 110 – RIM100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.26.4 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

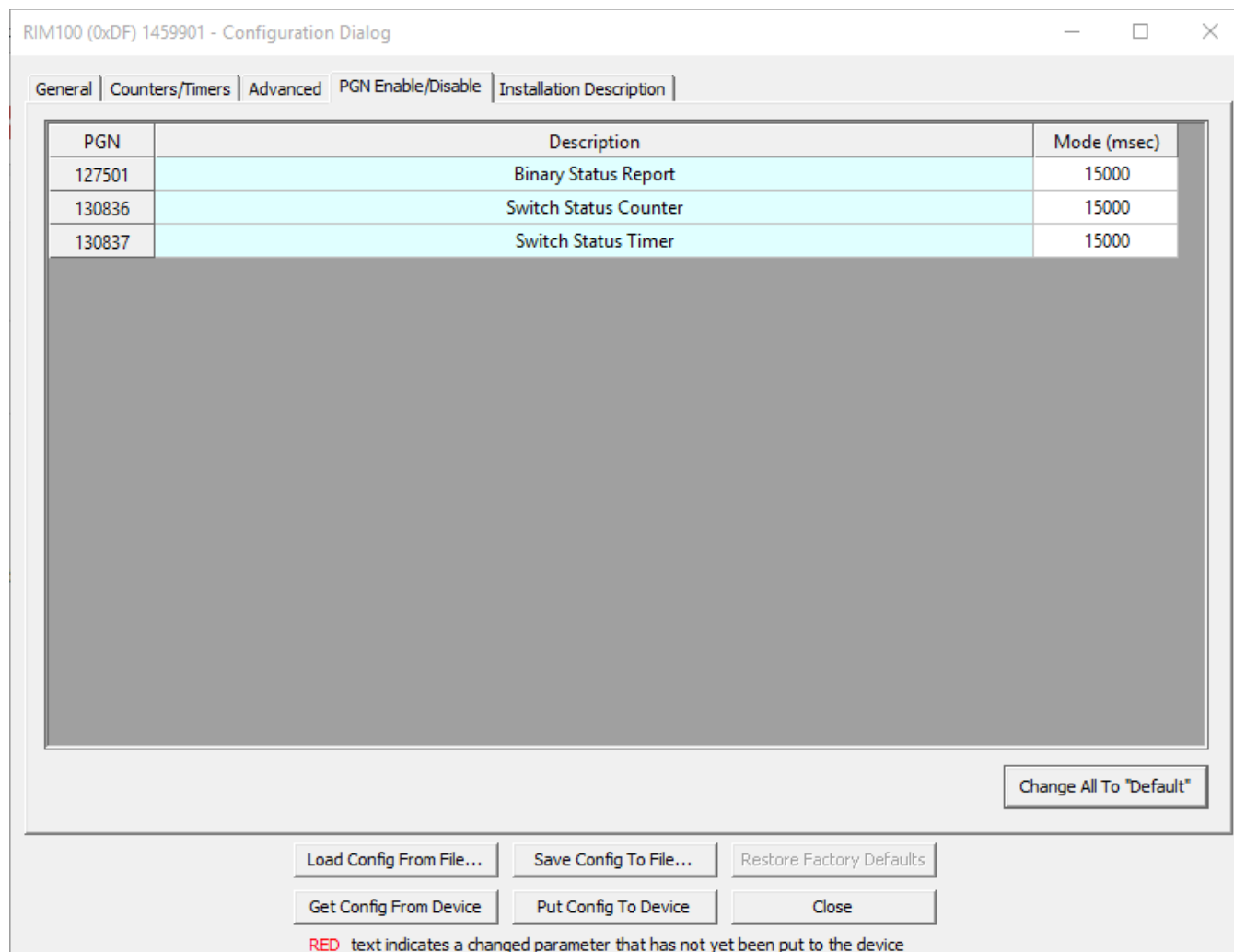


Figure 111 – RIM100 PGN Enable/Disable Tab

5.26.5 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

RIM100 (0xDF) 1459901 - Configuration Dialog

General | Counters/Timers | Advanced | PGN Enable/Disable | **Installation Description**

Installation Description #1 :

☒ ASCII (English language only, Max. 70 characters)

☐ Unicode (Max. 35 characters)

Installation Description #2 :

☒ ASCII (English language only, Max. 70 characters)

☐ Unicode (Max. 35 characters)

Manufacturer Information

Maretron 1-866-550-9100 www.maretron.com

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 112 – RIM100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.27 SIM100

5.27.1 General Tab

This tab contains commonly-used configuration items.

SIM100 (0xD0) 1439999 - Configuration Dialog

General | Counters/Timers | Advanced | PGN Enable/Disable | Installation Description

Label
(Max. 32 Characters)
Smoke Detectors

Instance : 0

Channel #1
Mode : End Of Line Resistor
Label : Galley

Channel #2
Mode : End Of Line Resistor
Label : Crew Quarters

Channel #3
Mode : End Of Line Resistor
Label : Helm

Channel #4
Mode : End Of Line Resistor
Label : Control Room

Channel #5
Mode : End Of Line Resistor
Label : Engine Room

Channel #6
Mode : End Of Line Resistor
Label : Engine Room Hatch

Load Config From File... Save Config To File... Restore Factory Defaults
Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 113 – SIM100 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Instance

This field identifies the switch bank to which this PGN applies.

Channel #x Mode

You may program each channel as “No End of Line Resistor”, if there is no 8KΩ end of line resistor present on the monitored switch, “End of Line Resistor”, if there is an 8KΩ end of line resistor present on the monitored switch, or “Disable” to disable the channel.

Channel #x Label

Each channel has a text label you can set to identify the switch monitored by that channel (for example, “SMOKE ALARM” or “HATCH AJAR”). For each channel, set this to a value which describes the switch being monitored so that you can easily identify it in display devices.

5.27.2 Counters/Timers Tab

This tab contains controls to view the state of and to reset the hardware counters and timers in the SIM100.

The screenshot displays the 'Counters/Timers' tab of the SIM100 configuration dialog. It features six panels, one for each channel (Channel #1 through Channel #6). Each panel is divided into two sections: 'Counters' and 'Timers'. The 'Counters' section includes fields for 'Since' (a timestamp), 'OFF' (a count), 'ON' (a count), and 'ERROR' (a count), along with a 'Reset' button. The 'Timers' section includes fields for 'Since' (a timestamp), 'OFF' (a time duration), 'ON' (a time duration), and 'ERROR' (a time duration), also with a 'Reset' button. At the bottom of the dialog, there are six buttons: 'Load Config From File...', 'Save Config To File...', 'Restore Factory Defaults', 'Get Config From Device', 'Put Config To Device', and 'Close'. A red text note at the bottom states: 'RED text indicates a changed parameter that has not yet been put to the device'.

Figure 114 – SIM100 Counters/Timers Tab

Each channel of the SIM100 maintains counters that track how many times the channel has transitioned into each of the states OFF, ON, and ERROR. The “Counters” section of this dialog for each channel has the following fields:

- **Since:** the time and date that the channel’s counter was last reset (this requires that a source of time and date, usually a GPS receiver, be present on the NMEA 2000 network.
- **OFF:** the number of times that this channel has transitioned into the OFF state since the channel’s counters were last reset.

- **ON:** the number of times that this channel has transitioned into the ON state since the channel's counters were last reset.
- **ERROR:** the number of times that this channel has transitioned into the ERROR state since the channel's counters were last reset.
- **Reset:** Pressing this button will reset the OFF, ON, and ERROR counters to zero values, and will update the "Since:" field for this channel's counters to the current time and date.

Each channel of the SIM100 maintains timers of the elapsed time that the channel has spent in each of the states OFF, ON, and ERROR. The "Timers" section of this dialog for each channel has the following fields:

- **Since:** the time and date that the channel's timer was last reset (this requires that a source of time and date, usually a GPS receiver, be present on the NMEA 2000 network).
- **OFF:** the elapsed time that this channel has been in the OFF state since the channel's timer were last reset.
- **ON:** the elapsed time that this channel has been in the ON state since the channel's timers were last reset.
- **ERROR:** the elapsed time that this channel has been in the ERROR state since the channel's timers were last reset.
- **Reset:** Pressing this button will reset the OFF, ON, and ERROR timers to zero values, and will update the "Since:" field for this channel's timers to the current time and date.

5.27.3 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

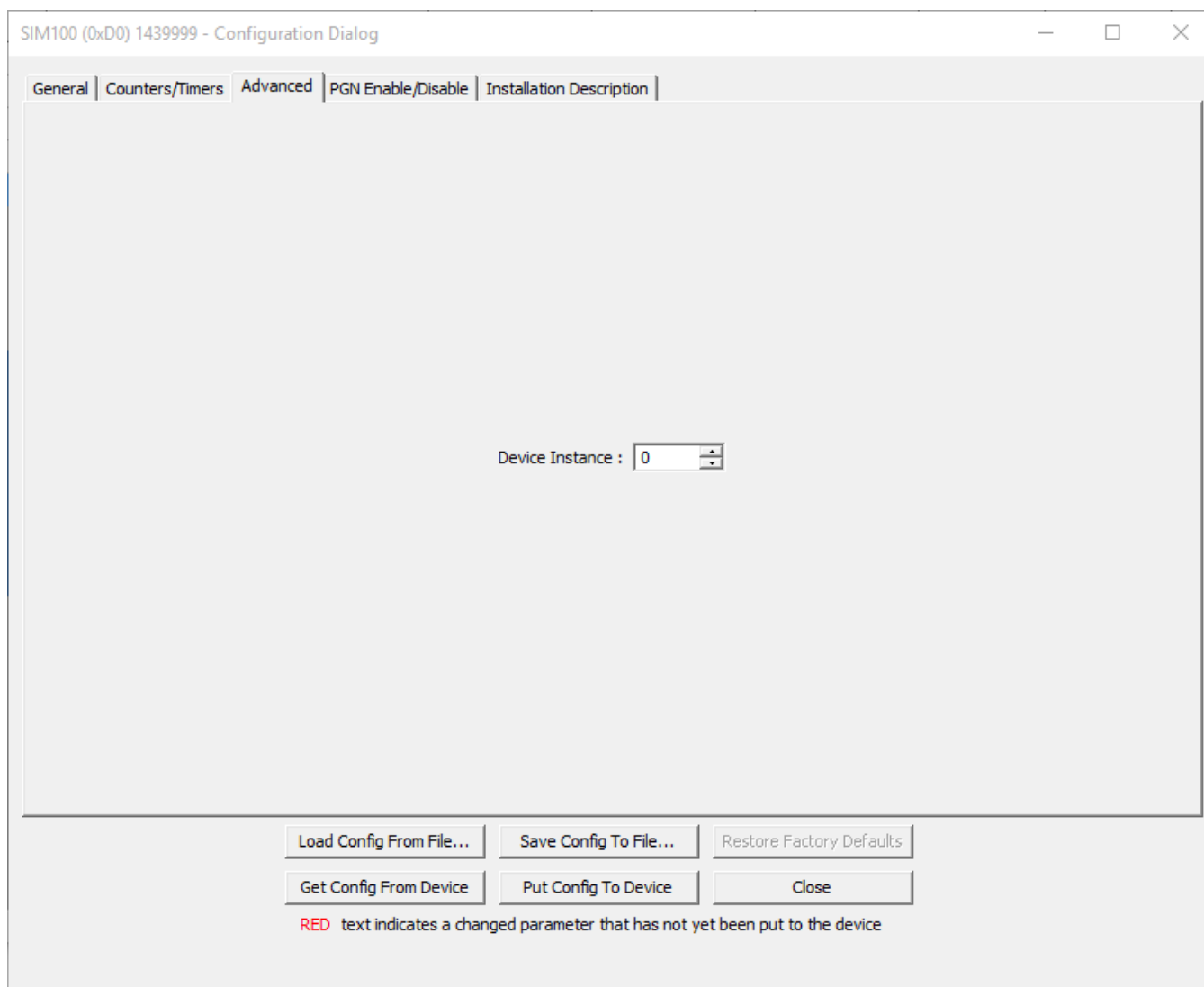


Figure 115 – SIM100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.27.4 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

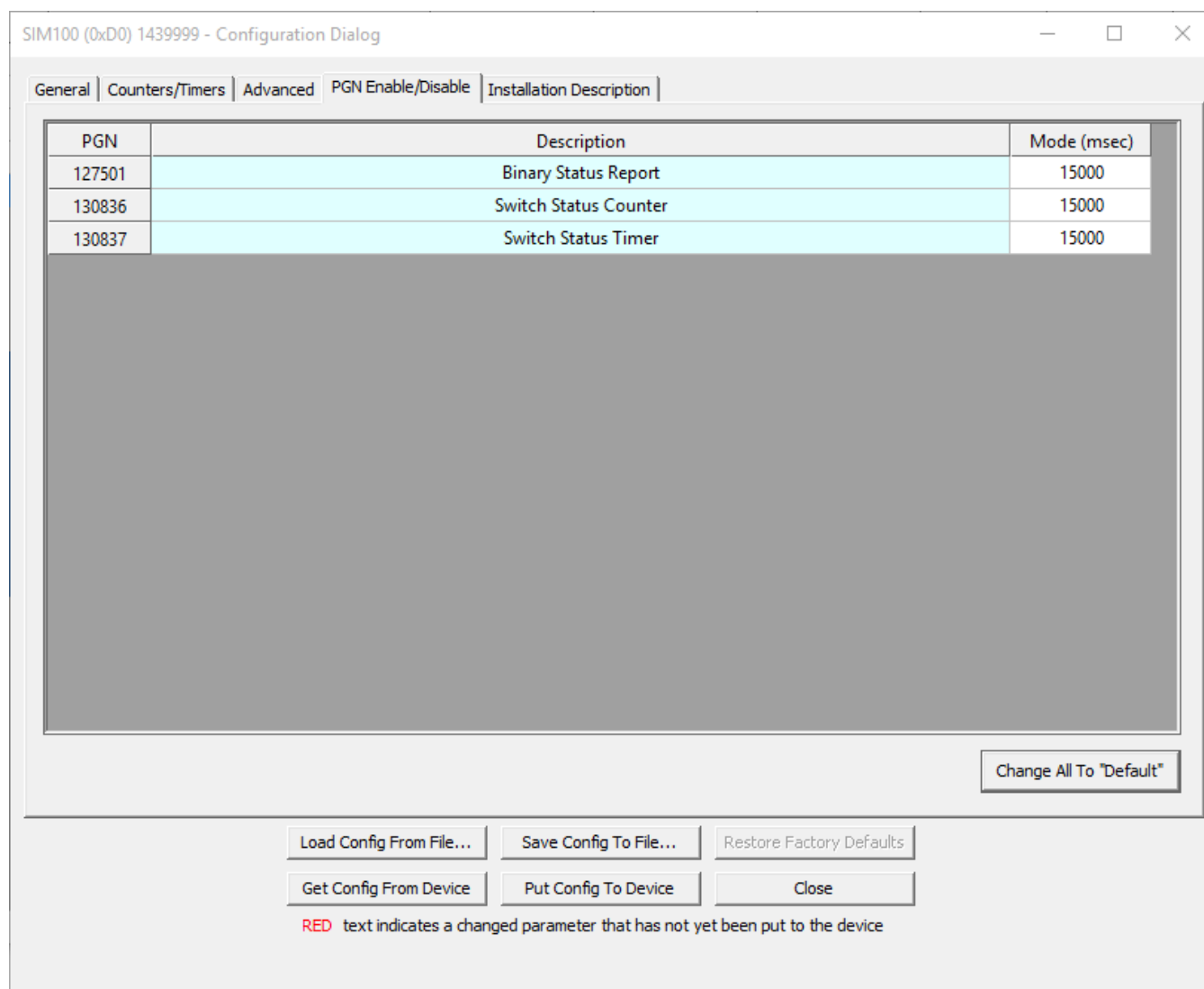


Figure 116 – SIM100 PGN Enable/Disable tab

5.27.5 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

SIM100 (0xD0) 1439999 - Configuration Dialog

General | Counters/Timers | Advanced | PGN Enable/Disable | Installation Description

Installation Description #1 :

☒ ASCII (English language only, Max. 70 characters)

☐ Unicode (Max. 35 characters)

Installation Description #2 :

☒ ASCII (English language only, Max. 70 characters)

☐ Unicode (Max. 35 characters)

Manufacturer Information

Maretron 1-866-550-9100 www.maretron.com

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 117 – SIM100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.28 SMS100

5.28.1 General Tab

This tab contains commonly-used configuration items.

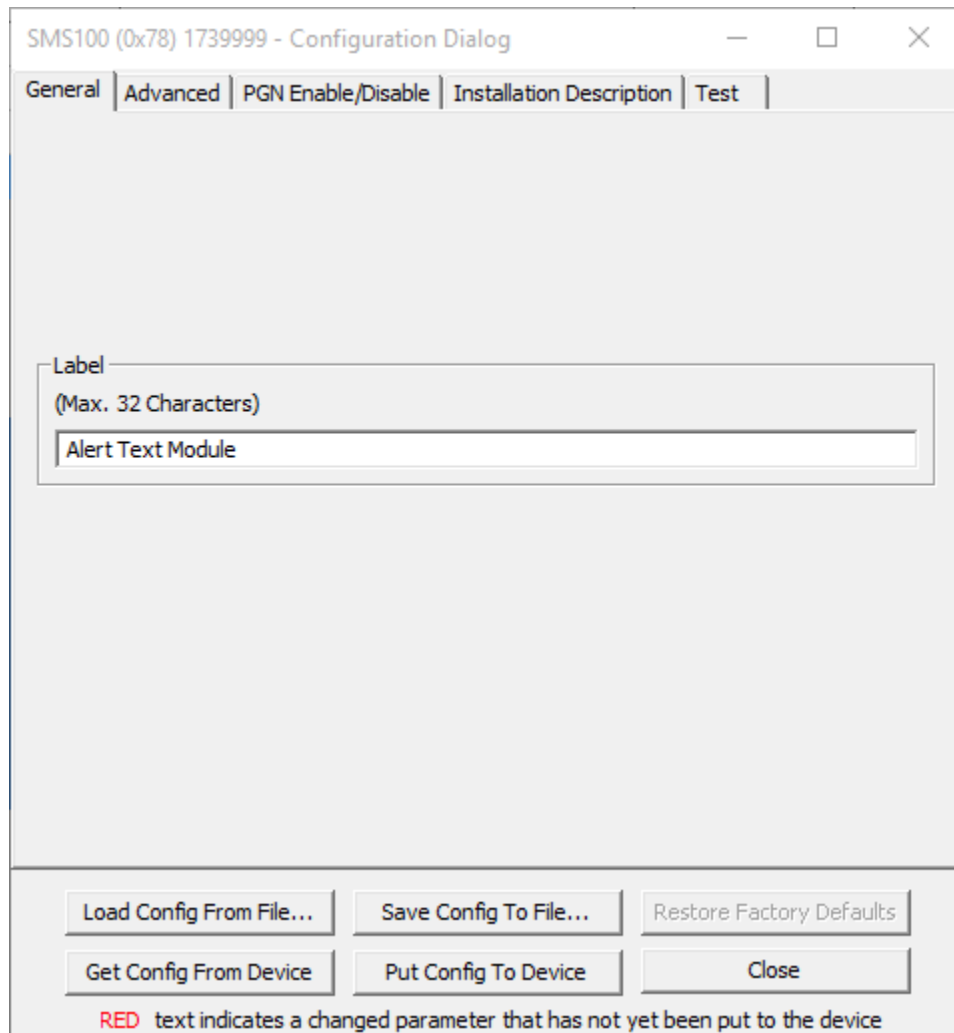


Figure 118 – SMS100 General Tab

5.28.2 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

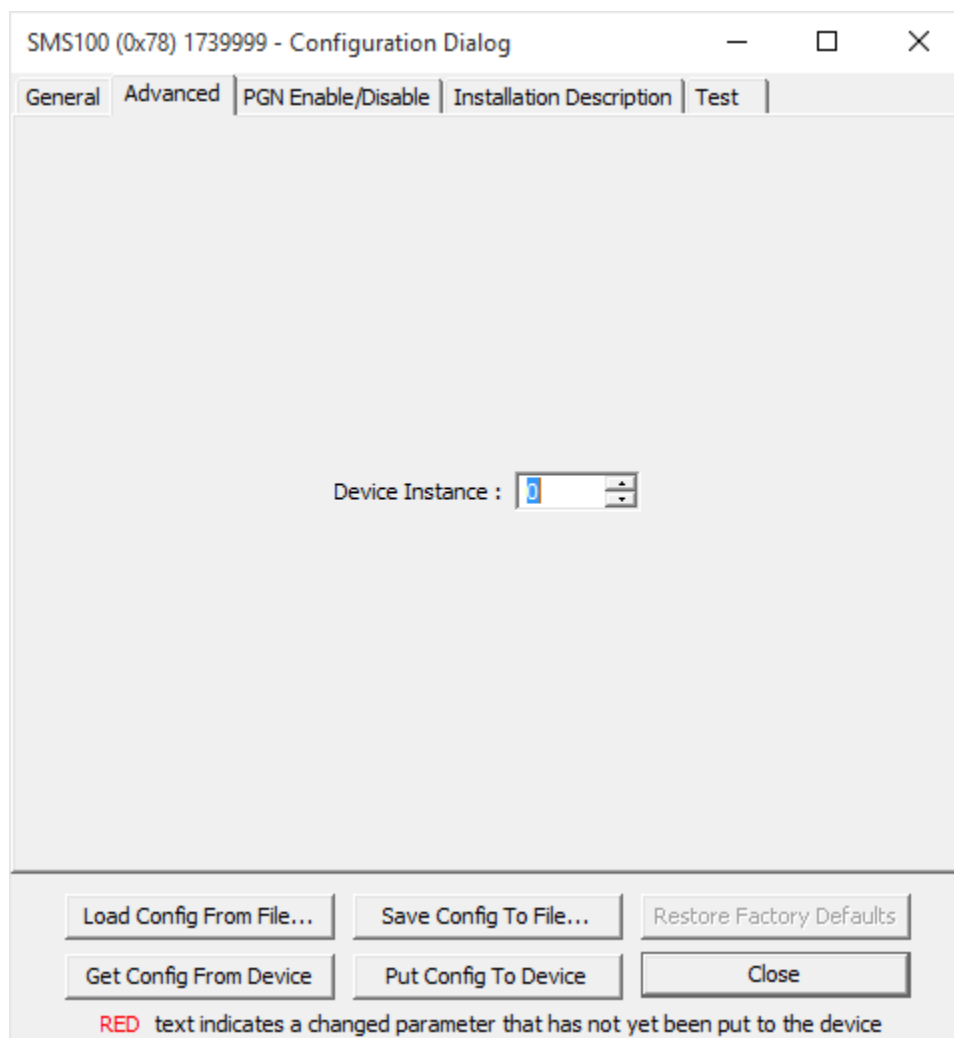


Figure 119 – SMS100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.28.3 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

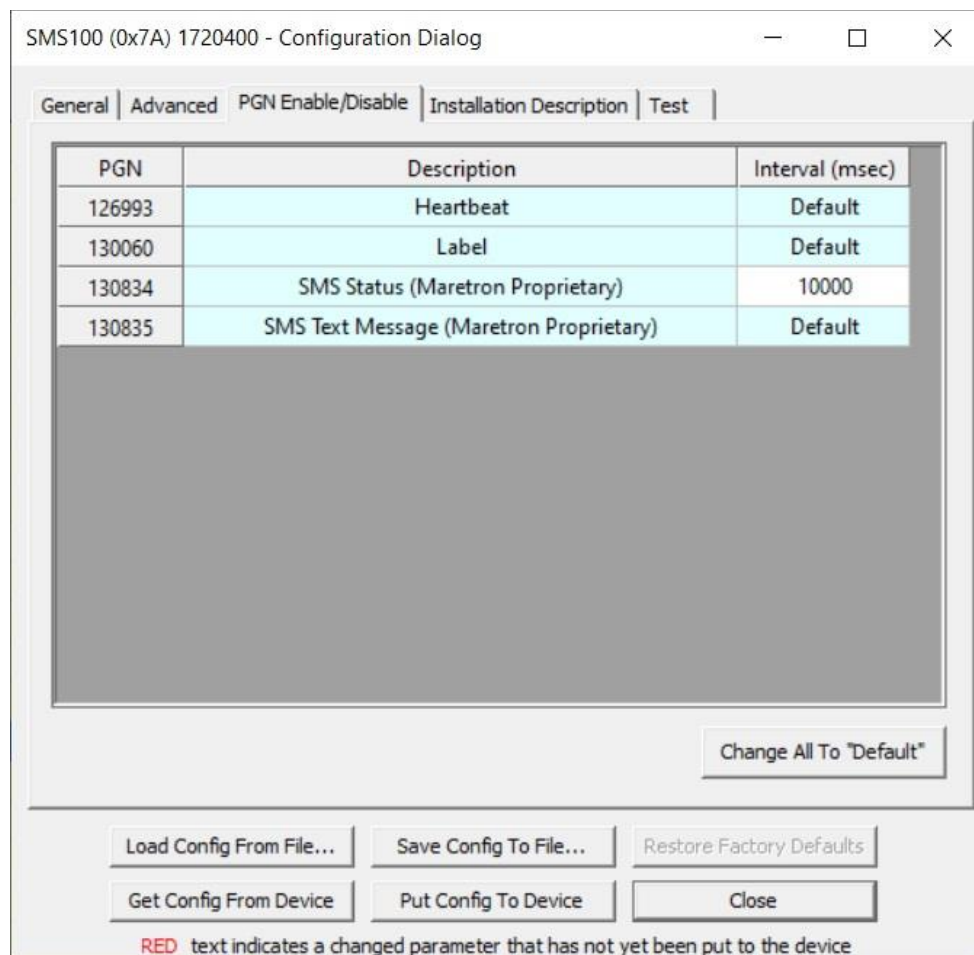


Figure 120 – SMS100 PGN Enable/Disable Tab

5.28.4 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

The screenshot shows a software window titled "SMS100 (0x78) 1739999 - Configuration Dialog". It has five tabs: "General", "Advanced", "PGN Enable/Disable", "Installation Description" (which is selected), and "Test". The "Installation Description" tab contains three main sections:

- Installation Description #1 :** This section has two radio buttons: "ASCII (English language only, Max. 70 characters)" (which is selected) and "Unicode (Max. 35 characters)". Below the radio buttons is a large empty text box.
- Installation Description #2 :** This section also has two radio buttons: "ASCII (English language only, Max. 70 characters)" (selected) and "Unicode (Max. 35 characters)". Below the radio buttons is another large empty text box.
- Manufacturer Information :** This section contains a single text box with the text "Maretron 1-866-550-9100 www.maretron.com".

At the bottom of the dialog, there are six buttons arranged in two rows: "Load Config From File...", "Save Config To File...", "Restore Factory Defaults", "Get Config From Device", "Put Config To Device", and "Close". Below these buttons, a red text label states: "RED text indicates a changed parameter that has not yet been put to the device".

Figure 121 – SMS100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.28.5 Test Tab

This screen allows you to perform some basic diagnostics of the SMS100 and its connection to the cellular network.

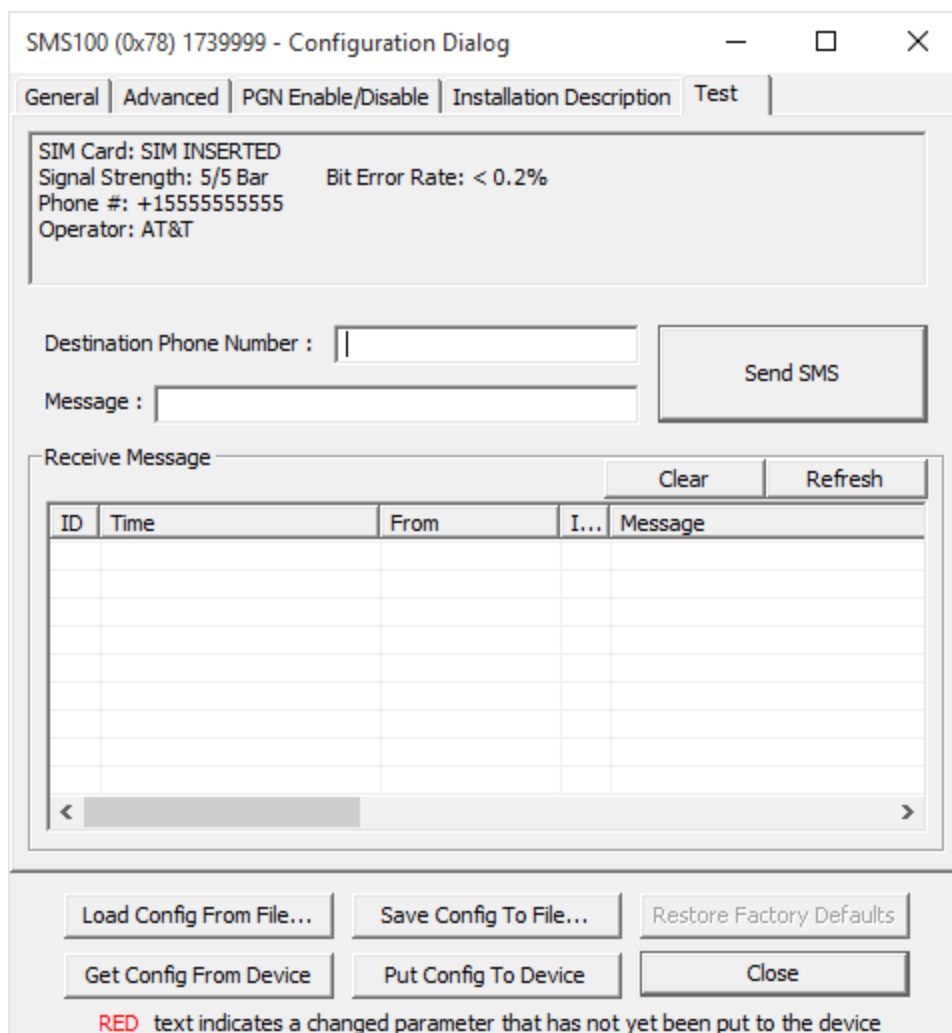


Figure 122 – SIM100 Test Tab

The top section of the screen shows the current operating status of the SMS100.

- **SIM Card** – This entry shows the status of the SIM card. Normally, it should show “SIM INSERTED”.
- **Signal Strength** – This entry shows the signal strength of the cellular network as seen by the SMS100. This signal strength is shown on a scale of one to five bars.
- **Phone #** - This entry identifies the phone number used by the SMS100. This phone number is defined by the SIM card which is installed in the SMS100.
- **Operator** – This entry identifies the cellular provider the SMS100 is currently connected to.
- **Bit Error Rate** – This entry shows the bit error rate of the cellular network connection. This figure may be requested by Maretron technical support personnel.

The middle section of the screen allows you to send a SMS text message to an arbitrary phone number. To send a test message, enter the phone number to which you wish to send the message into the “Destination Phone Number” field, then enter the text of the message to be

sent into the “Message” field, and finally, scroll to the “Send” field and press the “Send SMS” button. The text in the Message field will be sent to the telephone number in the “Destination Phone Number” field.

The bottom section of the screen displays the SMS text messages most recently received by the SMS100. You can test SMS100 message reception by using a cellular telephone to send a SMS text message to the telephone number of the SMS100, and then watching for the message to appear on this section of the screen within a few seconds to a minute or longer, depending on the cellular network.

5.29 SSC200

The SSC200 is Maretron’s second generation Solid State Compass.

5.29.1 General Tab

This tab contains commonly-used configuration items.

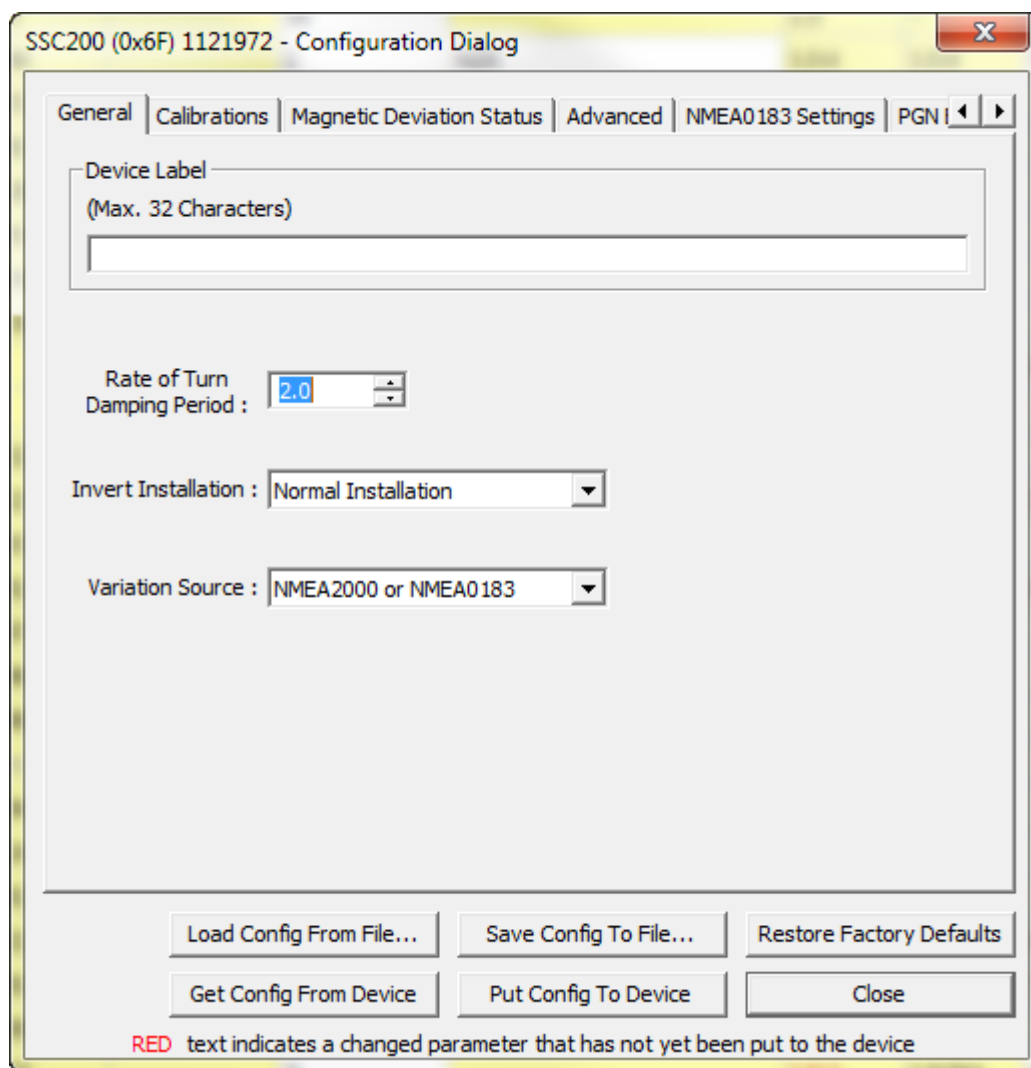


Figure 123 – SSC200 General Tab

Device Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Rate of Turn Damping Period

This command causes the SSC200 to use a rate of turn damping rate corresponding to the value programmed in this field. The damping period is programmable from 100ms to 60 seconds.

Invert Installation

Normally, the SSC200 is mounted so that the label on the compass is facing up and the NMEA 2000 and NMEA 0183 connectors are facing towards the bow of the vessel. Recent versions of SSC200 firmware support mounting the compass upside-down (for instance, to a ceiling), or backwards (with connectors facing towards the stern of the vessel, so that the SSC200 can be mounted to the aft side of a bulkhead). If either of these mounting options is used, this

parameter can be used to inform the SSC200 of this fact so that it can adjust heading, rate or turn, pitch, and roll readings to be corrected accordingly.

The choices that are offered are “Normal Installation” (default), “Backward Installation”, “Upside-Down Installation”, or “Upside Down and Backward”.

Variation Source

The SSC200, being a magnetic compass, transmits heading information referenced to the magnetic north pole (magnetic heading). The SSC200 is capable of transmitting heading information referenced to the earth’s geographic North Pole (true heading). To produce true heading, information regarding the magnetic variation at the current location is required. Please see the *SSC200 User’s Manual* for more details on the use of magnetic variation by the SSC200 compass.

By default, the SSC200 can receive variation information on either its NMEA 0183 or NMEA 2000 interfaces. This causes the SSC200 to use variation data from either the NMEA 0183 interface or the NMEA 2000 interface.

You should need to alter this setting only if:

- There are variation sources available on both the NMEA 2000 and NMEA 0183 interfaces, or
- There is no magnetic variation source available.

If variation sources are available on both the NMEA 2000 and NMEA 0183 interfaces, you must configure the SSC200 which source to use. If you select the NMEA 0183 source, this causes the SSC200 to use variation data from the NMEA 0183 interface and ignore all other variation sources (i.e., NMEA 2000 interface and manual entries).

If there is no magnetic variation source available on either the NMEA 2000 or the NMEA 0183 interface, and you wish to display true heading information, you may manually enter a magnetic variation.

WARNING: Magnetic variation changes as your location on the earth changes; therefore, magnetic variation should be adjusted with changes in position. The SSC200 will NOT make these changes automatically; they are the responsibility of the user.

5.29.2 Calibrations Tab

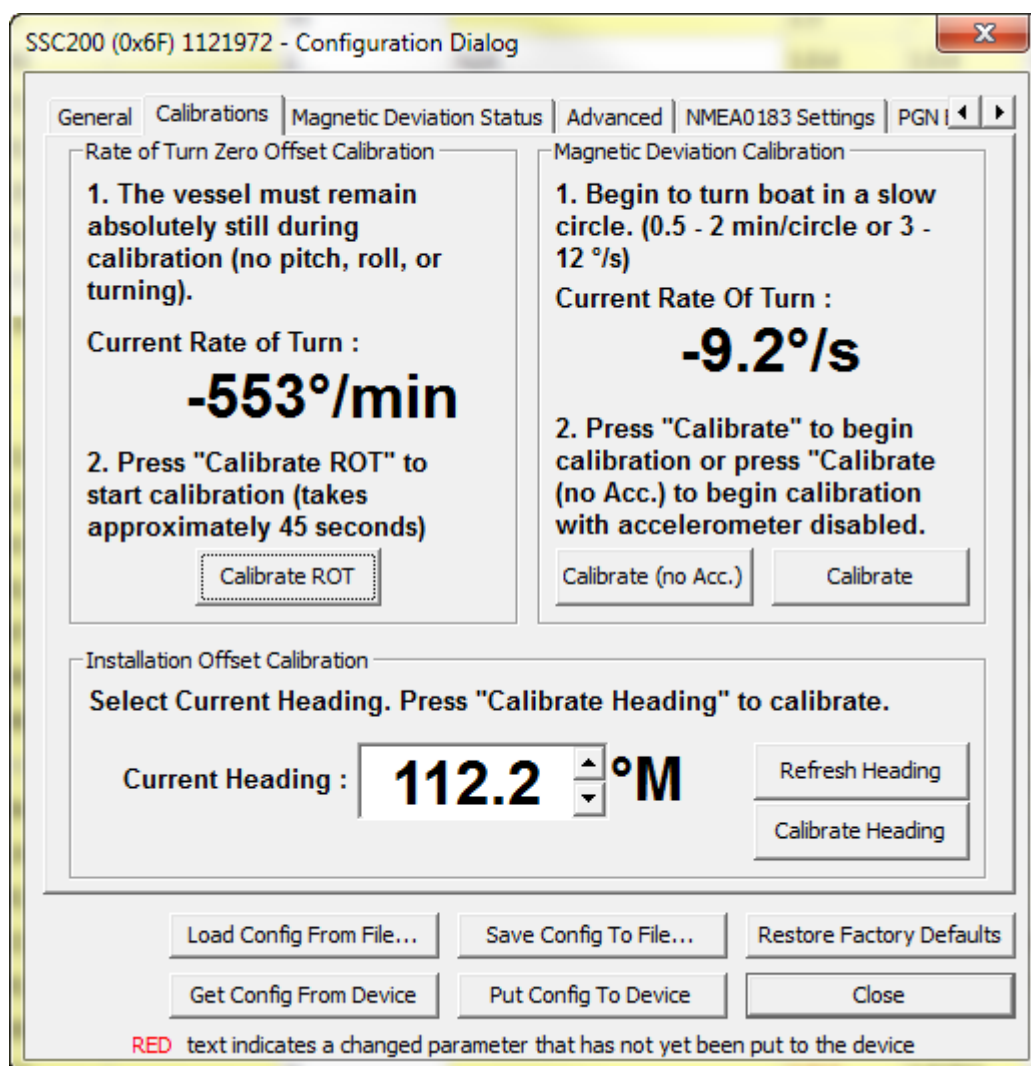


Figure 124 – SSC200 Calibrations Tab

Rate of Turn Zero Offset Calibration

The SSC200 transmits rate of turn information. Although the compass provides very accurate rate of turn information, it can drift away from zero even though the vessel is not turning. Fortunately, the SSC200 can learn the zero offset for different conditions found on the vessel. You teach the compass these zero offset values by pressing the “Calibrate ROT” button. The Rate of Turn Offset Calibration should be done before the Deviation Calibration.

Installation Offset Calibration

The installation offset (i.e., misalignment of installed SSC200 with vessel’s center line) may be calibrated using N2KAnalyzer. While executing “Installation Offset Calibration”, the vessel must stay still with no pitch and roll because SSC200 will also calibrate pitch and roll at this time. Once the compass is installed, point the vessel at a known heading, enter the known heading value into the “Current Heading” text box, and finally press “Calibrate Heading” to perform the installation offset calibration.

Magnetic Deviation Calibration

N2Kalyzer can perform magnetic deviation calibration on a Maretron SSC200 solid state compass. The Rate of Turn Zero Offset Calibration should be done before the Magnetic Deviation Calibration. The Calibrations Tab gives instructions for performing the procedure. First, begin to turn the boat in a slow circle (either clockwise or counter-clockwise) at about 3 to 12 degrees per second. Then, press the “Calibrate” button. If you are in a large vessel, it may be difficult to turn the vessel in a small enough circle to avoid significant centrifugal force applied to the compass during magnetic deviation calibration. This can cause the built-in tilt sensors inside the compass to mistakenly believe that the compass is tilted during the magnetic deviation calibration, which can adversely affect the quality of the magnetic deviation calibration, especially in northerly latitudes where magnetic inclination (magnetic dip) is higher. If this is the case, instead of pressing “Calibrate” button, press the “Calibrate (No Acc)” button. This will cause the compass to ignore its tilt sensors and assume that the compass is level to the earth’s surface during the calibration. You must keep the boat level during calibration if you choose this option.

After you press the “Calibrate” button, the Magnetic Deviation Calibration screen will appear. It will show the progress of the magnetic deviation calibration process. This progress screen shows the number of circles completed, the current heading, the current rate of turn, and the current status of compass calibration. If you do not wish to continue magnetic deviation calibration at this time, press “Abort”, and the currently stored deviation tables will be retained. Once calibration is successful, a completion screen will appear. If calibration is unsuccessful, a screen will appear indicating this, and you should repeat the calibration procedure.

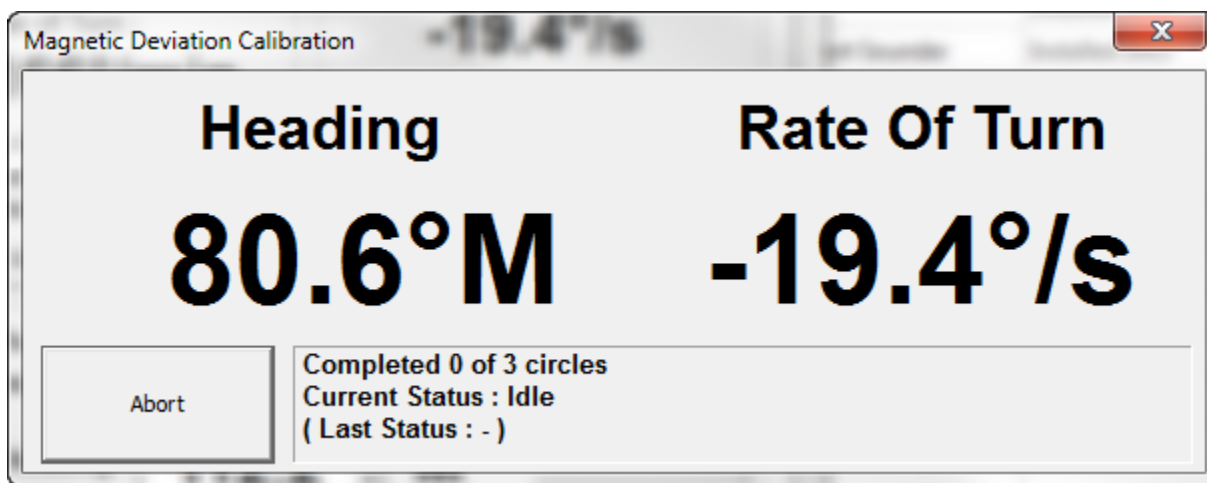


Figure 125 – SSC200 Magnetic Deviation Calibration Screen

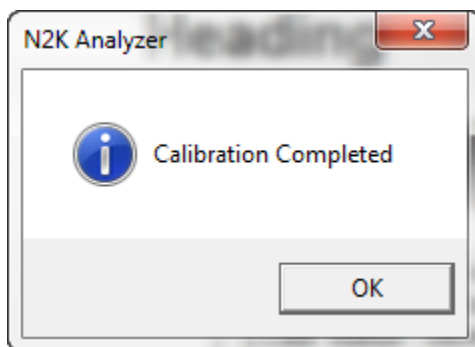


Figure 126 – SSC200 Magnetic Deviation Calibration Completion Window

5.29.3 Magnetic Deviation Status Tab

Selecting the Magnetic Deviation Status tab causes the Magnetic Deviation Status screen to be displayed, as shown below.

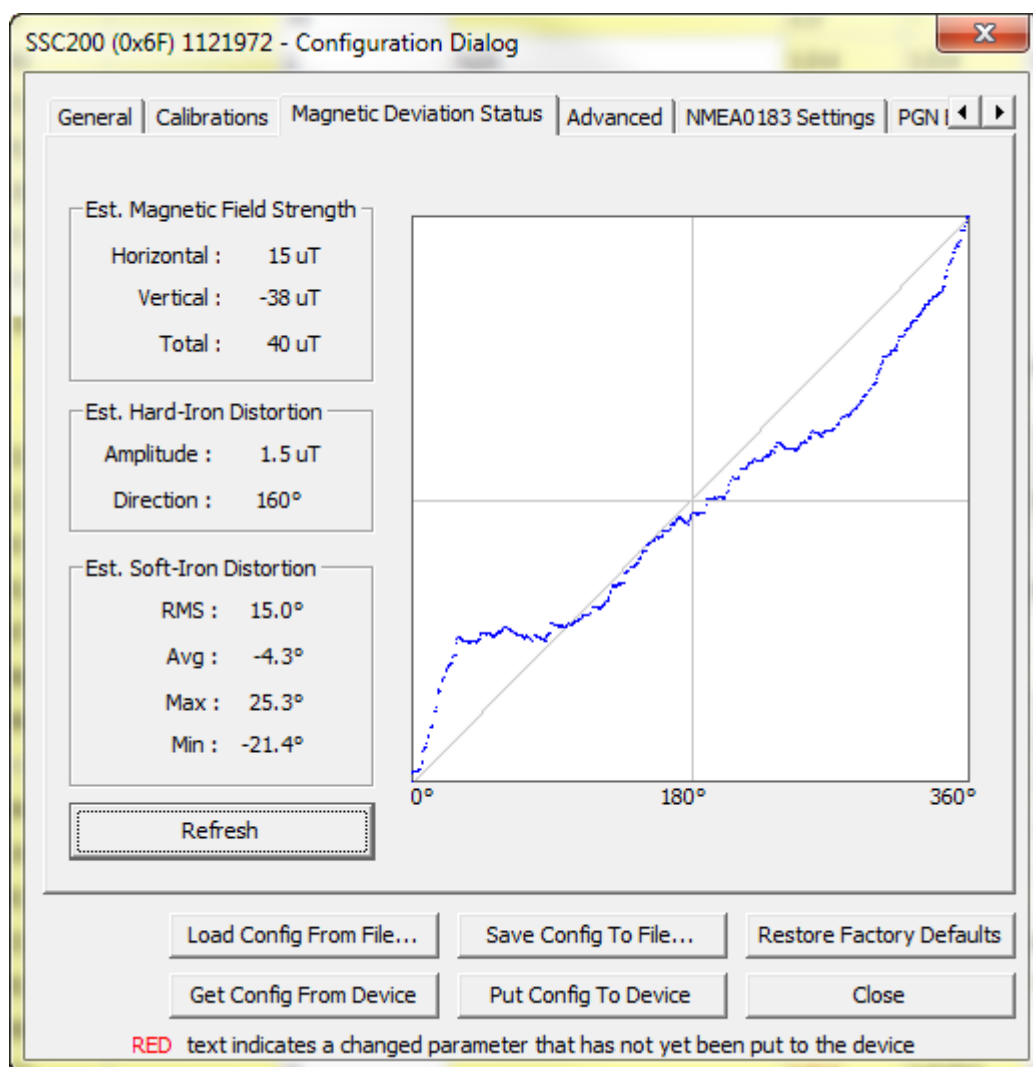


Figure 127 – SSC200 Magnetic Deviation Status Tab

5.29.4 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

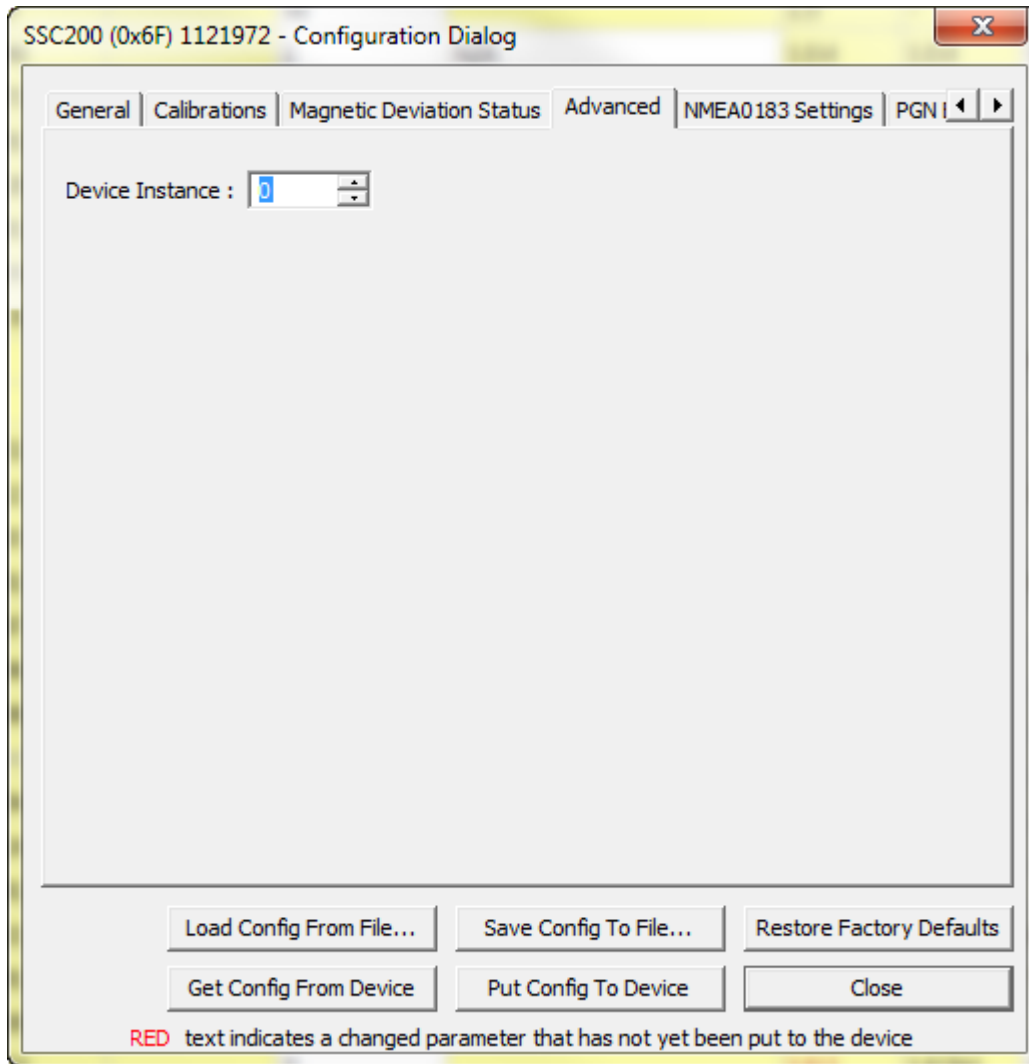


Figure 128 – SSC200 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.29.5 NMEA0183 Settings Tab

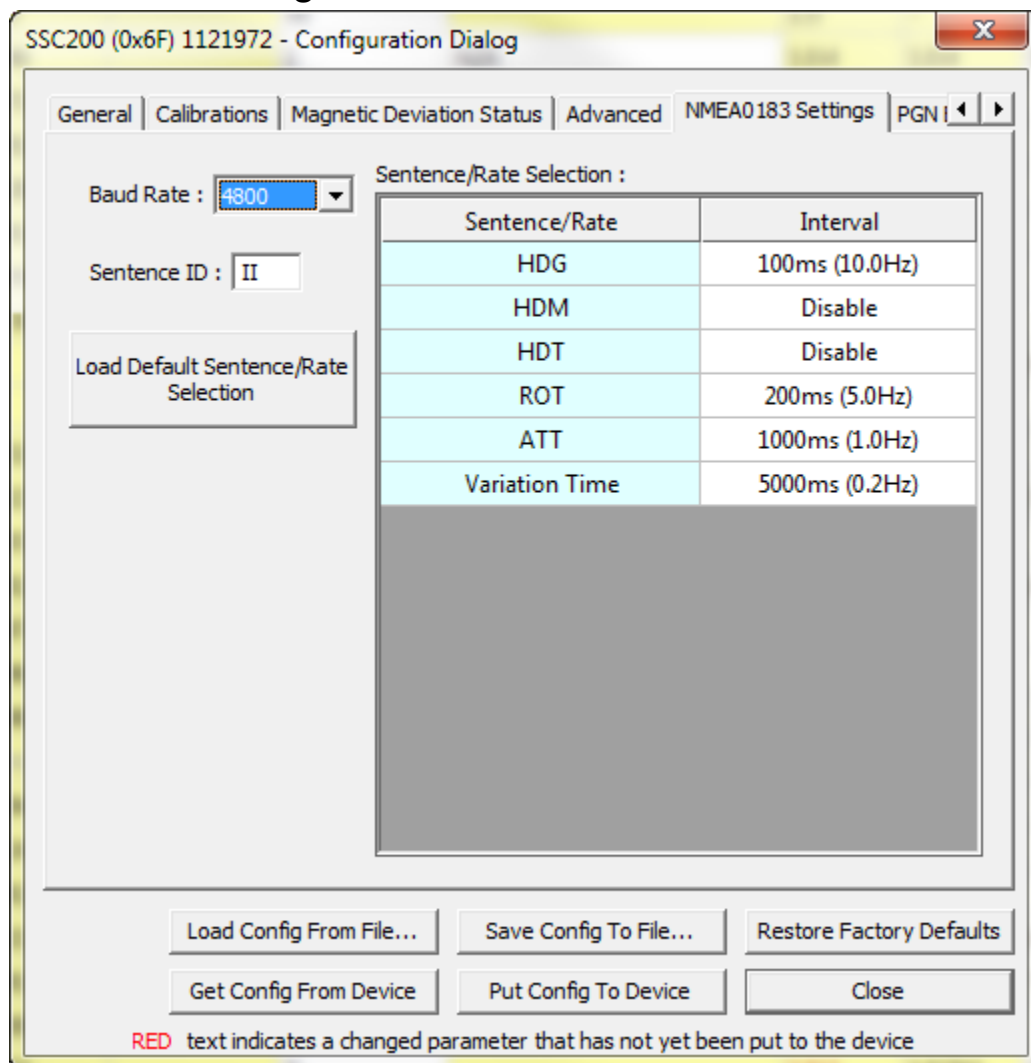


Figure 129 – SSC200 NMEA 0183 Settings Tab

Baud Rate

The usual baud rate on the NMEA 0183 port is 4800 baud. You may change the baud rate using this parameter.

Sentence ID

The normal NMEA 0183 sentence ID transmitted by the SSC200 is "II". If your NMEA 0183 equipment requires a different NMEA 0183 sentence ID, you may change it using this parameter.

Sentence/Rate Selection

The NMEA 0183 interface is a very low bandwidth interface. The SSC200 can transmit a wide variety of NMEA 0183 sentences and can exceed the bandwidth of the NMEA 0183 interface if

all sentences are transmitted at maximum rates, causing lost data in NMEA 0183 multiplexers or on the SSC200 interface itself. It is important, therefore, to limit the types of NMEA 0183 sentences transmitted only to those that are necessary for other products which are connected to the NMEA 0183 interface. Using these parameters, you can selectively enable and disable the different NMEA 0183 sentences that the SSC200 can transmit, and you can program the transmission interval for the enabled sentences.

Load Default Sentence/Rate Selection

Pressing this button changes the NMEA 0183 sentence transmission rates to their factory default values.

5.29.6 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

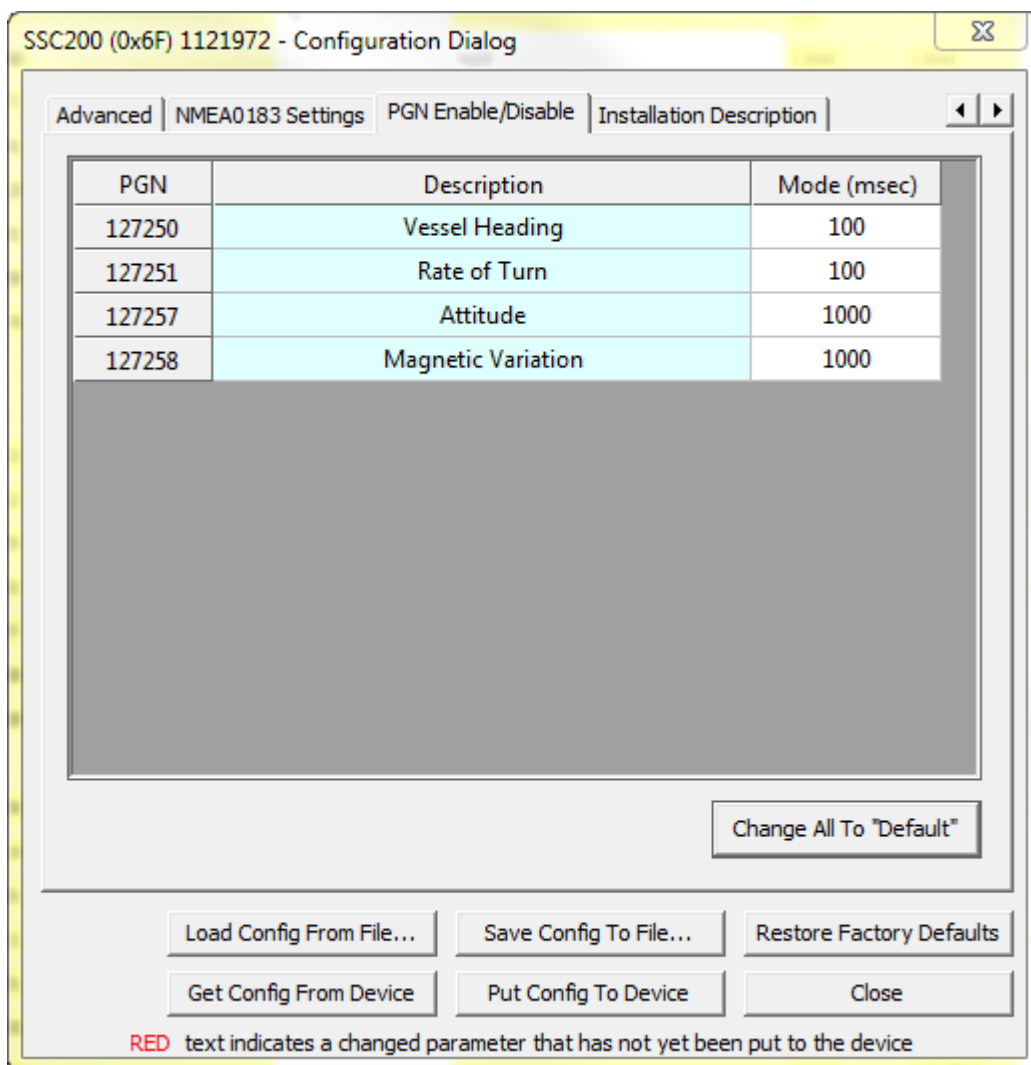


Figure 130 – SSC200 PGN Enable/Disable tab

5.29.7 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

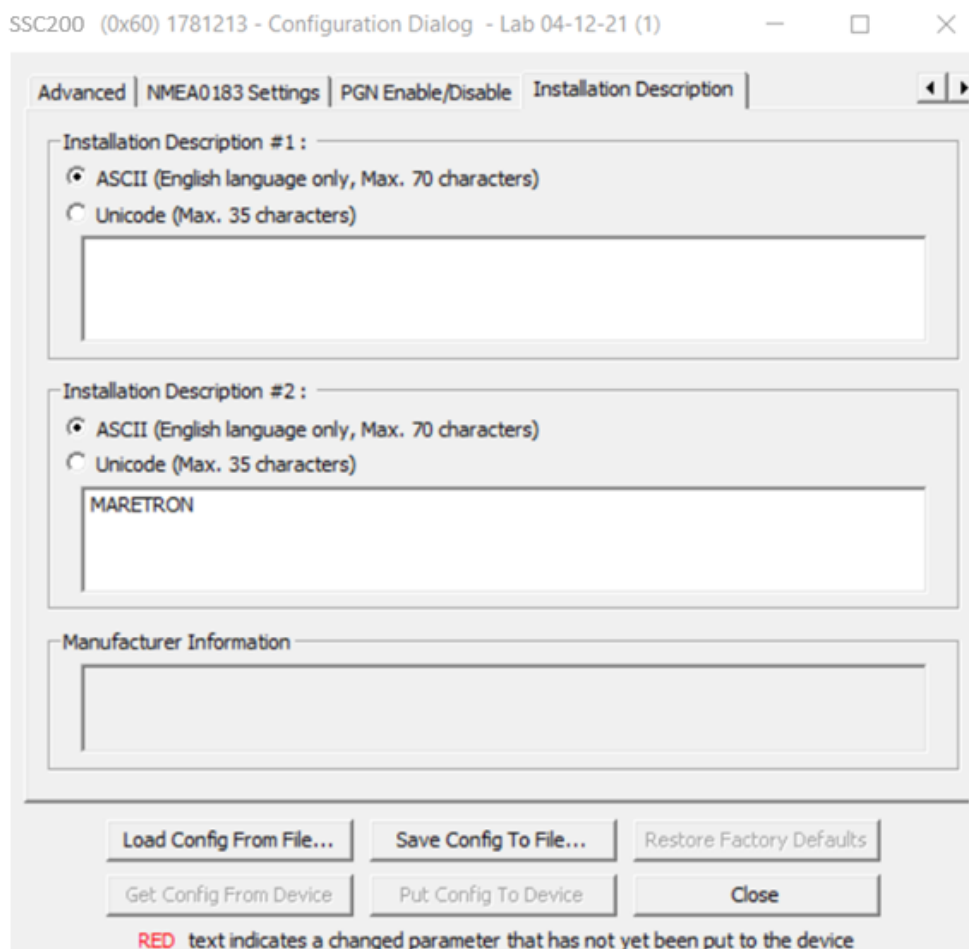


Figure 131 SSC200 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.30 SSC300

The SSC300 is Maretron's third generation Solid State Compass.

5.30.1 General Tab

This tab contains commonly-used configuration items.

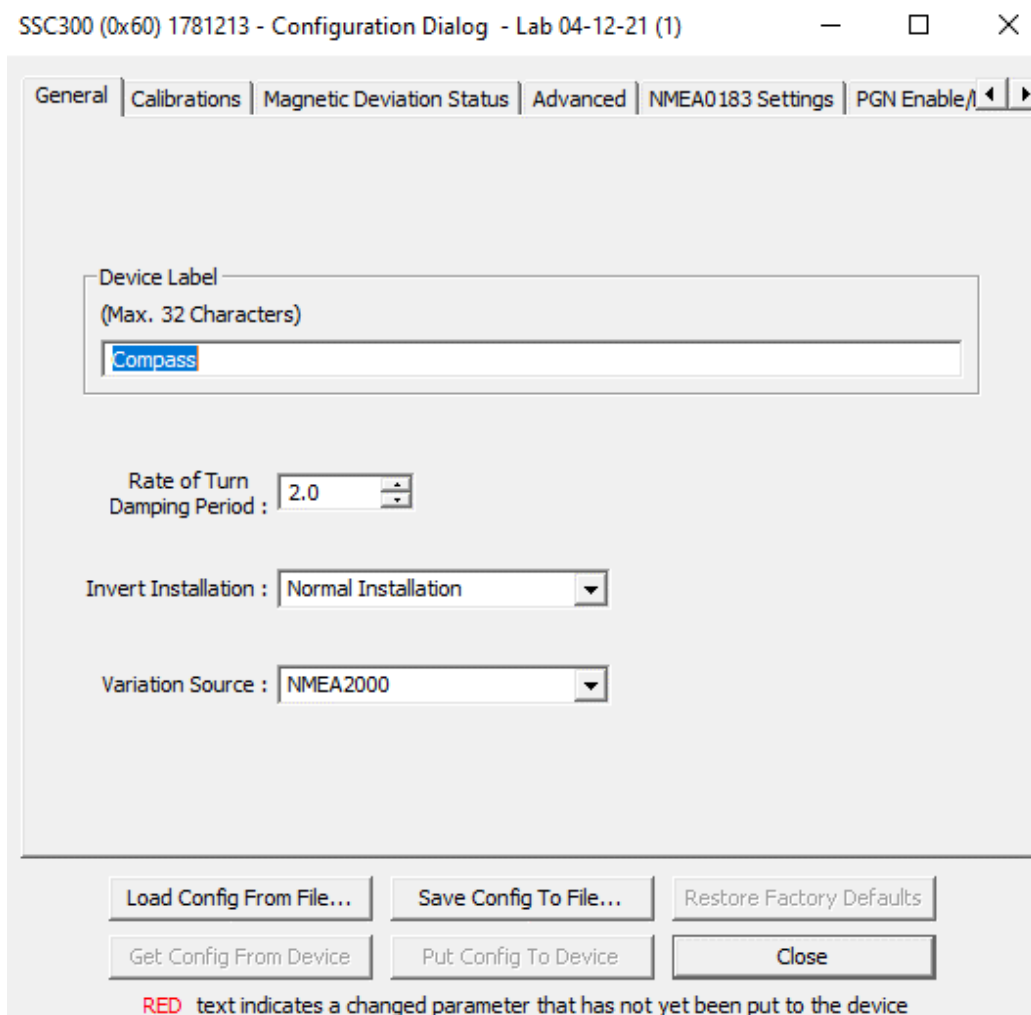


Figure 132 – SSC300 General Tab

Device Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Rate of Turn Damping Period

This command causes the SSC300 to use a rate of turn damping rate corresponding to the value programmed in this field. The damping period is programmable from 100ms to 60 seconds.

Invert Installation

Normally, the SSC300 is mounted so that the label on the compass is facing up and the NMEA 2000 and NMEA 0183 connectors are facing towards the bow of the vessel. SSC300 firmware supports mounting the compass upside-down (for instance, to a ceiling), or backwards (with connectors facing towards the stern of the vessel, so that the SSC300 can be mounted to the aft side of a bulkhead). If either of these mounting options is used, this parameter can be used

to inform the SSC300 of this fact so that it can adjust heading, rate or turn, pitch, and roll readings to be corrected accordingly.

The choices that are offered are “Normal Installation” (default), “Backward Installation”, “Upside-Down Installation”, or “Upside Down and Backward”.

Variation Source

The SSC300, being a magnetic compass, transmits heading information referenced to the magnetic north pole (magnetic heading). The SSC300 is capable of transmitting heading information referenced to the earth's geographic North Pole (true heading). To produce true heading, information regarding the magnetic variation at the current location is required. Please see the *SSC300 User's Manual* for more details on the use of magnetic variation by the SSC300 compass.

By default, the SSC300 can receive variation information on either its NMEA 0183 or NMEA 2000 interfaces. This causes the SSC300 to use variation data from either the NMEA 0183 interface or the NMEA 2000 interface.

You should need to alter this setting only if:

- There are variation sources available on both the NMEA 2000 and NMEA 0183 interfaces, or
- There is no magnetic variation source available.

If variation sources are available on both the NMEA 2000 and NMEA 0183 interfaces, you must configure the SSC300 which source to use. If you select the NMEA 0183 source, this causes the SSC300 to use variation data from the NMEA 0183 interface and ignore all other variation sources (i.e., NMEA 2000 interface and manual entries).

If there is no magnetic variation source available on either the NMEA 2000 or the NMEA 0183 interface, and you wish to display true heading information, you may manually enter a magnetic variation.

WARNING: Magnetic variation changes as your location on the earth changes; therefore, magnetic variation should be adjusted with changes in position. The SSC300 will NOT make these changes automatically; they are the responsibility of the user.

5.30.2 Calibrations Tab

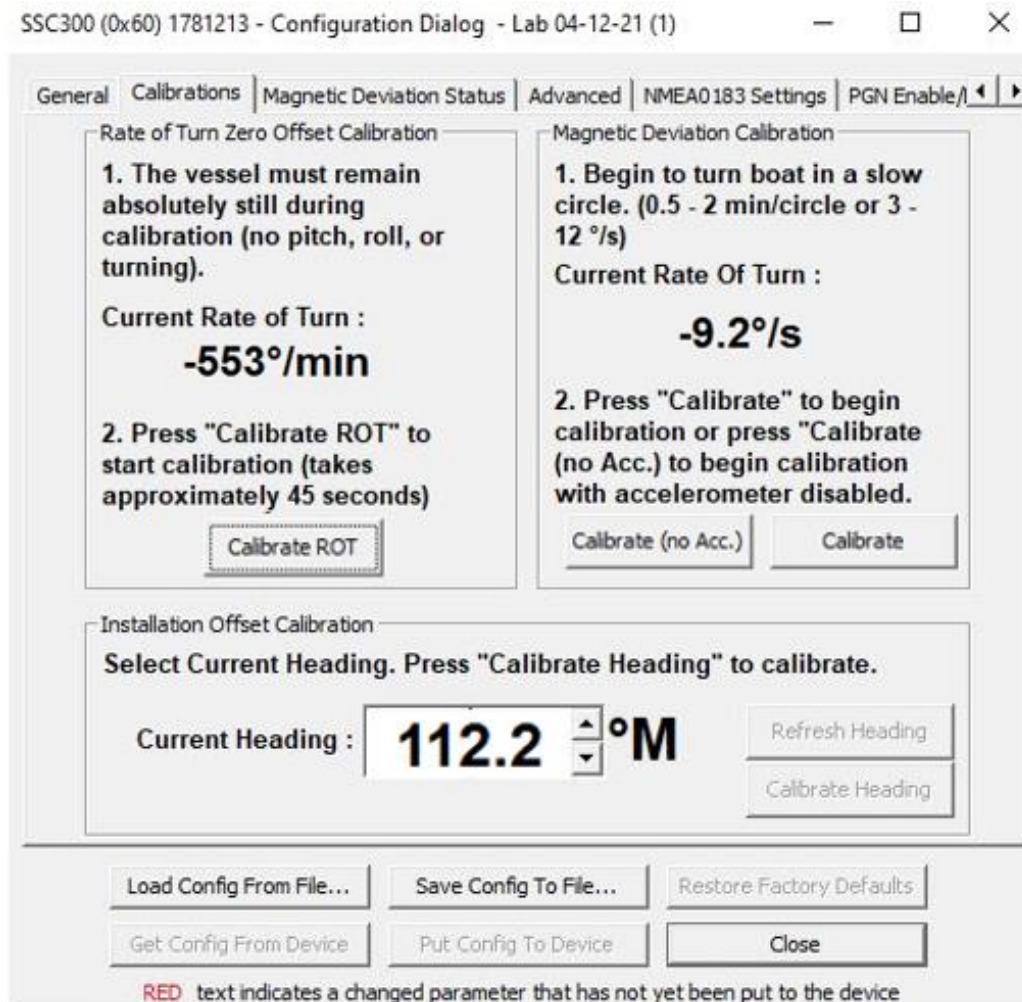


Figure 133 – SSC300 Calibrations Tab

Rate of Turn Zero Offset Calibration

The SSC300 transmits rate of turn information. Although the compass provides very accurate rate of turn information, it can drift away from zero even though the vessel is not turning. Fortunately, the SSC300 can learn the zero offset for different conditions found on the vessel. You teach the compass these zero offset values by pressing the “Calibrate ROT” button. The Rate of Turn Offset Calibration should be done before the Deviation Calibration.

Installation Offset Calibration

The installation offset (i.e., misalignment of installed SSC300 with vessel’s center line) may be calibrated using N2Kalyzer. While executing “Installation Offset Calibration”, the vessel must stay still with no pitch and roll because SSC300 will also calibrate pitch and roll at this time. Once the compass is installed, point the vessel at a known heading, enter the known heading value into the “Current Heading” text box, and finally press “Calibrate Heading” to perform the installation offset calibration.

Magnetic Deviation Calibration

N2KAnalyzer can perform magnetic deviation calibration on a Maretron SSC300 solid state compass. The Rate of Turn Zero Offset Calibration should be done before the Magnetic Deviation Calibration. The Calibrations Tab gives instructions for performing the procedure. First, begin to turn the boat in a slow circle (either clockwise or counter-clockwise) at about 3 to 12 degrees per second. Then, press the “Calibrate” button. If you are in a large vessel, it may be difficult to turn the vessel in a small enough circle to avoid significant centrifugal force applied to the compass during magnetic deviation calibration. This can cause the built-in tilt sensors inside the compass to mistakenly believe that the compass is tilted during the magnetic deviation calibration, which can adversely affect the quality of the magnetic deviation calibration, especially in northerly latitudes where magnetic inclination (magnetic dip) is higher. If this is the case, instead of pressing “Calibrate” button, press the “Calibrate (No Acc)” button. This will cause the compass to ignore its tilt sensors and assume that the compass is level to the earth’s surface during the calibration. You must keep the boat level during calibration if you choose this option.

After you press the “Calibrate” button, the Magnetic Deviation Calibration screen will appear. It will show the progress of the magnetic deviation calibration process. This progress screen shows the number of circles completed, the current heading, the current rate of turn, and the current status of compass calibration. If you do not wish to continue magnetic deviation calibration at this time, press Abort, and the currently stored deviation tables will be retained. Once calibration is successful, a completion screen will appear. If calibration is unsuccessful, a screen will appear indicating this, and you should repeat the calibration procedure.

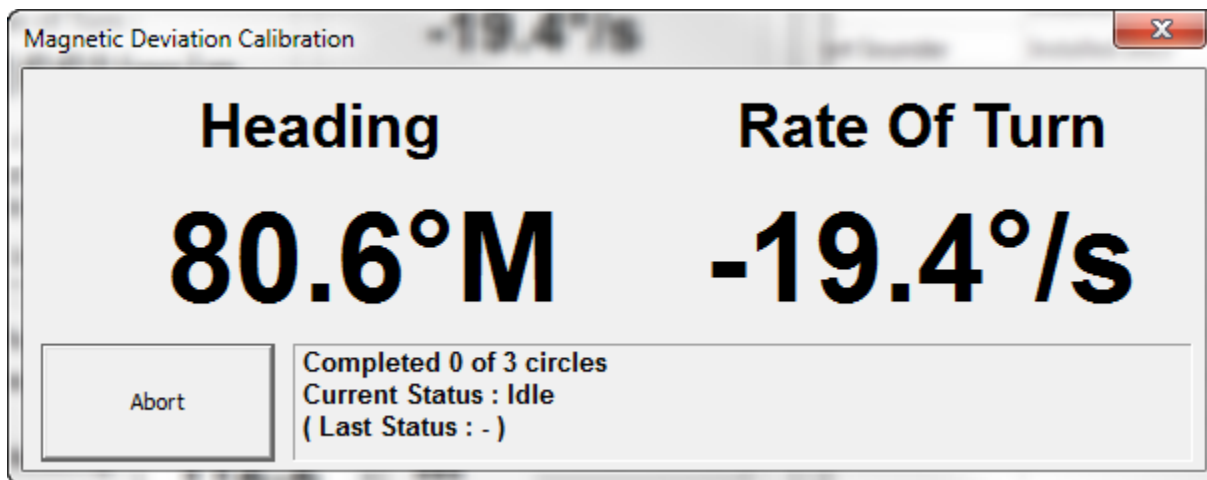


Figure 134 – SSC300 Magnetic Deviation Calibration Screen

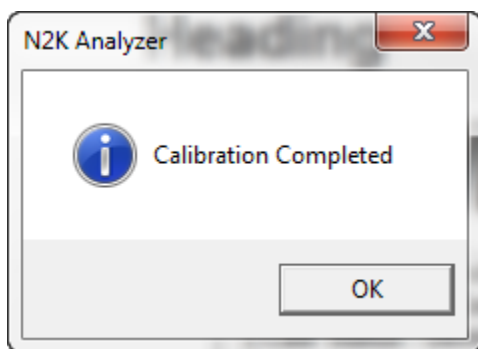


Figure 135 – SSC300 Magnetic Deviation Calibration Completion Window

5.30.3 Magnetic Deviation Status Tab

Selecting the Magnetic Deviation Status tab causes the Magnetic Deviation Status screen to be displayed, as shown below.

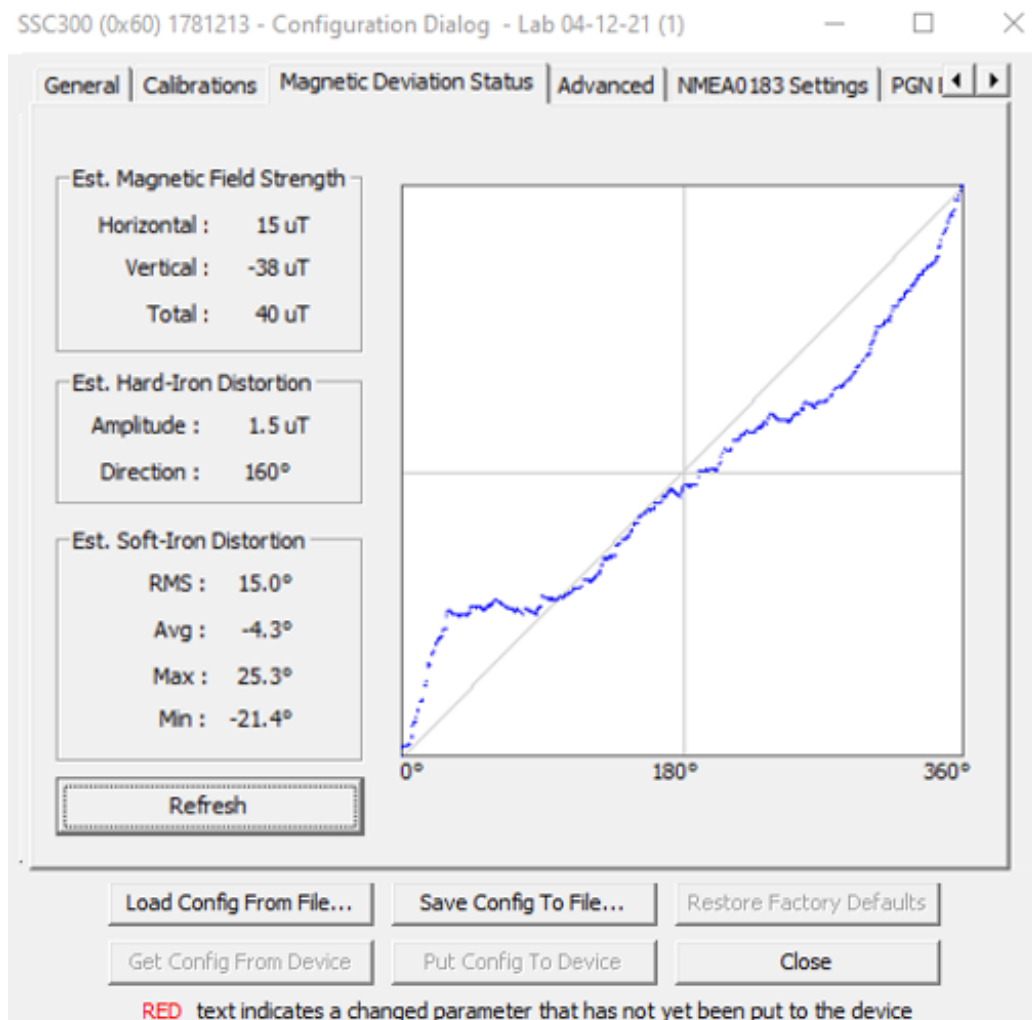


Figure 136 – SSC300 Magnetic Deviation Status Tab

5.30.4 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

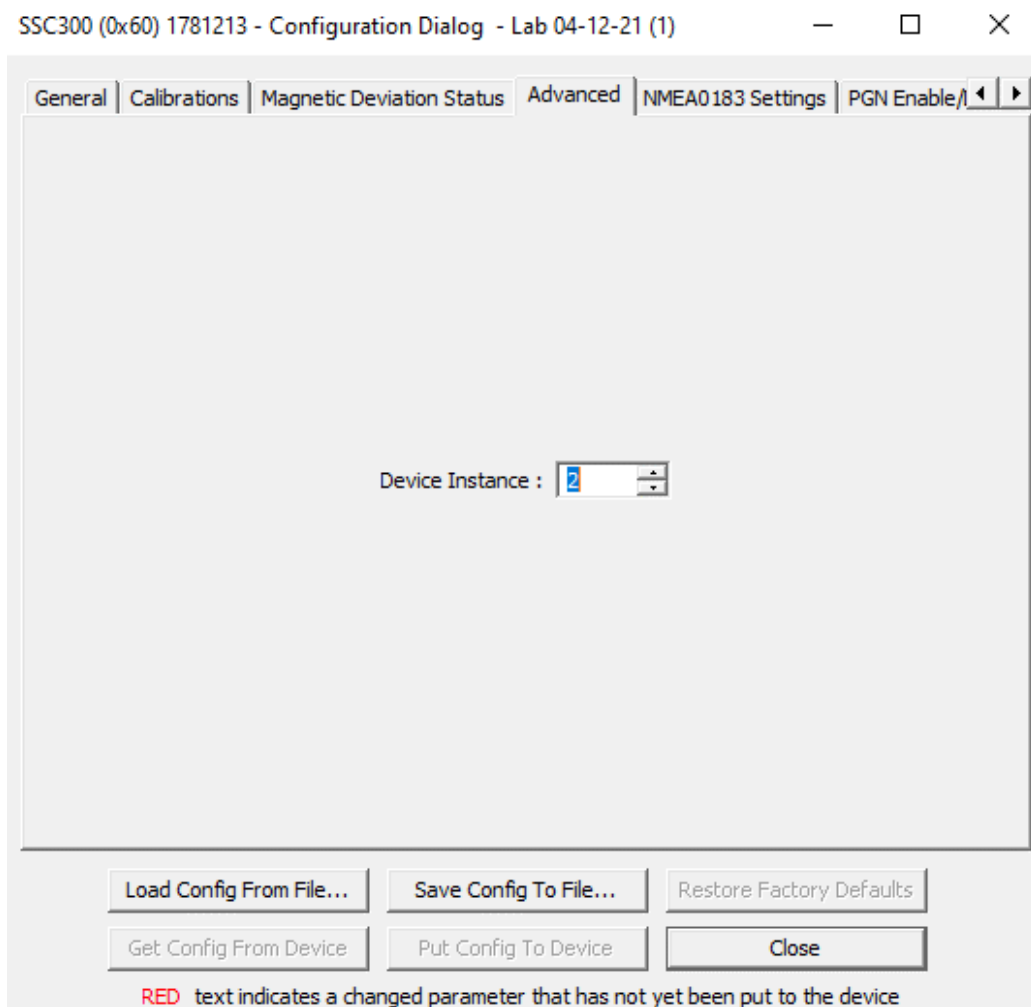


Figure 137 – SSC300 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.30.5 NMEA0183 Settings Tab

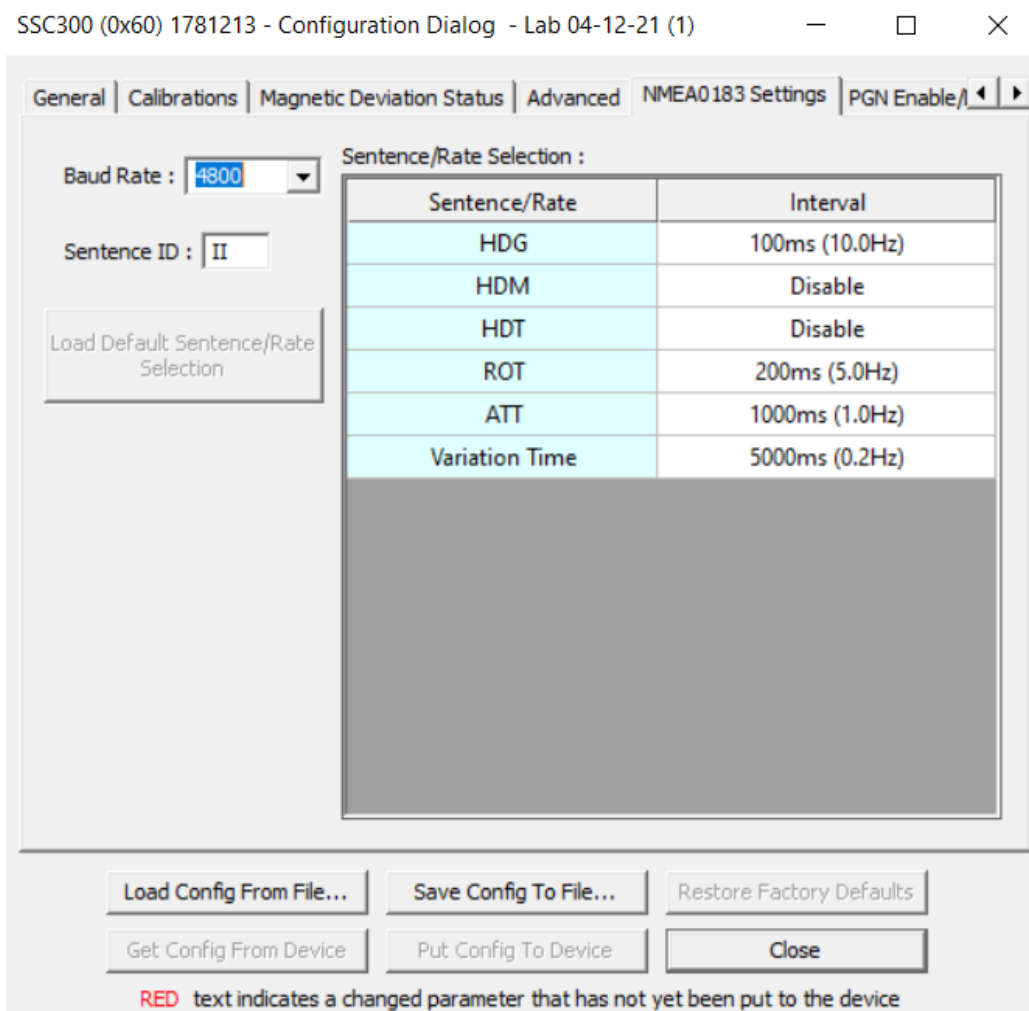


Figure 146 – SSC300 NMEA 0183 Settings Tab

Baud Rate

The usual baud rate on the NMEA 0183 port is 4800 baud. You may change the baud rate using this parameter.

Sentence ID

The normal NMEA 0183 sentence ID transmitted by the SSC200 is "II". If your NMEA 0183 equipment requires a different NMEA 0183 sentence ID, you may change it using this parameter.

Sentence/Rate Selection

The NMEA 0183 interface is a very low bandwidth interface. The SSC300 can transmit a wide variety of NMEA 0183 sentences and can exceed the bandwidth of the NMEA 0183 interface if all sentences are transmitted at maximum rates, causing lost data in NMEA 0183 multiplexers or on the SSC300 interface itself. It is important, therefore, to limit the types of NMEA 0183 sentences transmitted only to those that are necessary for other products which are connected

to the NMEA 0183 interface. Using these parameters, you can selectively enable and disable the different NMEA 0183 sentences that the SSC300 can transmit, and you can program the transmission interval for the enabled sentences.

Load Default Sentence/Rate Selection

Pressing this button changes the NMEA 0183 sentence transmission rates to their factory default values.

5.30.6 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

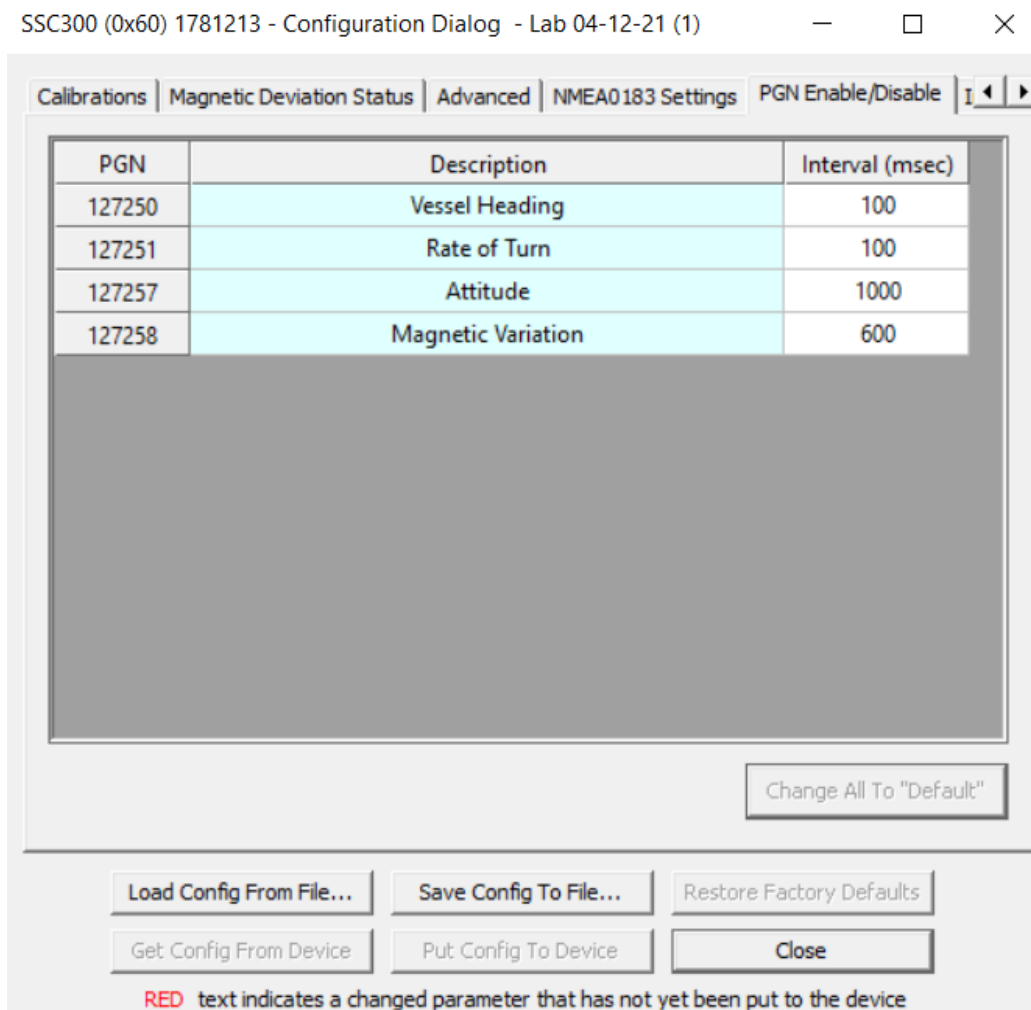


Figure 147 – SSC300 PGN Enable/Disable tab

5.30.7 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

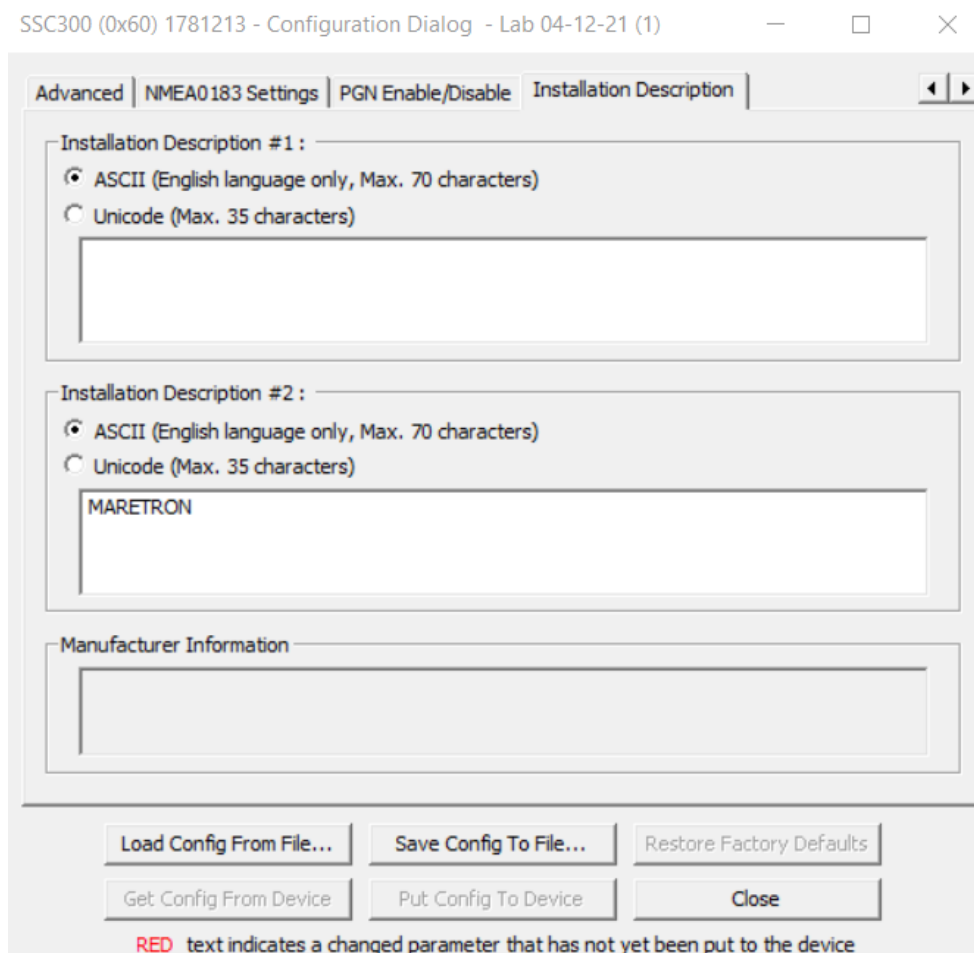


Figure 148 SSC300 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.31 TLA100

5.31.1 General Tab

This tab contains commonly-used configuration items.

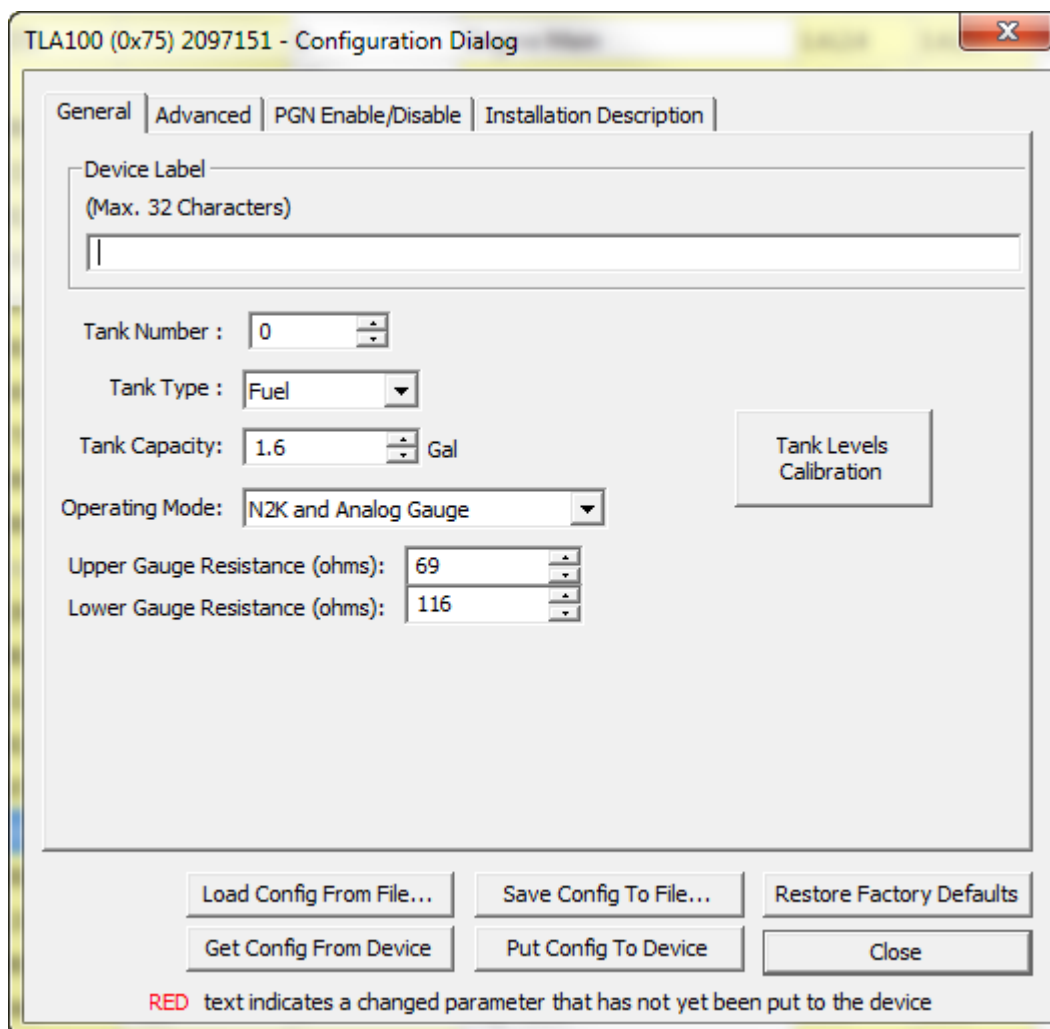


Figure 138 – TLA100 General Tab

Device Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Tank Number

A tank number can have a value between 0 and 15. Each tank of a particular type must have a tank number that is different from all other tanks of the same type. For instance, only one TLA100 on a fuel tank may have tank number equal to "0".

Tank Type

The TLA100 can be used in tanks containing any of many different types of fluids. So that network-connected monitoring devices can determine easily what sort of fluid is in the monitored tank, the TLA100 must be programmed to indicate the fluid type it is monitoring.

Tank Capacity

For the TLA100 to produce readings of the amount of fluid remaining in the tank, the tank capacity must be programmed into the TLA100 adapter.

Operating Mode

The TLA100 can be operated in one of two operating modes, depending on the installation.

NMEA 2000

(the only thing that is connected to the resistive sender is the TLA100)

In NMEA 2000 Mode, the TLA100 supplies an electrical current to the resistive tank sender and monitors the changing voltage as the tank is filled or emptied.

NMEA 2000 & Analog Gauge

(in addition to the TLA100, the resistive sender is also connected to a dual-coil analog gauge).

In NMEA 2000 & Analog Gauge mode, the analog gauge supplies the electrical current to the resistive tank sender while the TLA100 monitors the changing voltage. Placing the TLA100 into NMEA 2000 / Analog Gauge Mode requires you to configure the TLA100 with the analog gauge's Upper and Lower Gauge resistances.

NMEA 2000 & Analog Gauge (Type 2)

(in addition to the TLA100, the resistive sender is also connected to a Type 2 Current Source analog gauge).

In NMEA 2000 / Type 2 Analog Gauge Mode the TLA100 requires to be configured with the values of the amount of current sourced by the gauge

It is important that this setting be performed correctly for the TLA100 to produce correct level measurements.

Upper Gauge Resistance

If the desired operating mode is "NMEA 2000 & Analog Gauge", the gauge's Upper resistance value must be configured to the TLA (please refer to the *TLA100 User's Manual* for details on how to perform these measurements).

Lower Gauge Resistance

If the desired operating mode is "NMEA 2000 & Analog Gauge", the gauge's Lower resistance value must be configured to the TLA (please refer to the *TLA100 User's Manual* for details on how to perform these measurements).

5.31.2 Tank Levels Calibration

Pressing this button opens the Tank Calibration dialog, which is shown below.

There are two methods of calibration: Manual Table and Step Fill Table

5.31.3 Manual Table

Using the manual table method, you enter each entry of the measured parameter (depth) and the level of fluid in the tank. The table may have as few as 2 entries (for a tank with rectangular cross-section) or as many as 16 entries (for a tank with a complex cross-section).

TLA100 (0x75) 2097151 - Tank Calibration

Manual Table | Step Fill

Set to American Standard (240-33 ohm)

Set to European Standard (10-180 ohm)

Current Tank Calibration

Entry	Resistance (Ohm)	Level (%)
1	240	0.00
2	33	100.00
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-
11	-	-
12	-	-
13	-	-
14	-	-
15	-	-
16	-	-

Number of Table Entries: 2

Load Config From File... Save Config To File...

Get Config From Device Put Config To Device

Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 139 – TLA100 Tank Calibration: Manual Table

Number of Table Entries

You may choose the number of entries to be in the calibration table. Two is sufficient for a tank with a rectangular cross-section. The TLA100 supports up to 16 table entries for supporting tanks with more complex cross-sections.

Current Tank Calibration

This grid shows the values of the tank calibration table. Each line of the grid has two entries:

- 1) Resistance – this is the resistance of the tank level sender
- 2) Level (%) – this is the percent full the tank is at the specific resistance

5.31.4 Step Fill Table

In the Step Fill Table method, you start with an empty tank, and then fill the tank with fluid, stopping at intermediate points to enter the amount of fluid put into the tank thus far, ending once the tank is full. You may enter between two and sixteen calibration points.

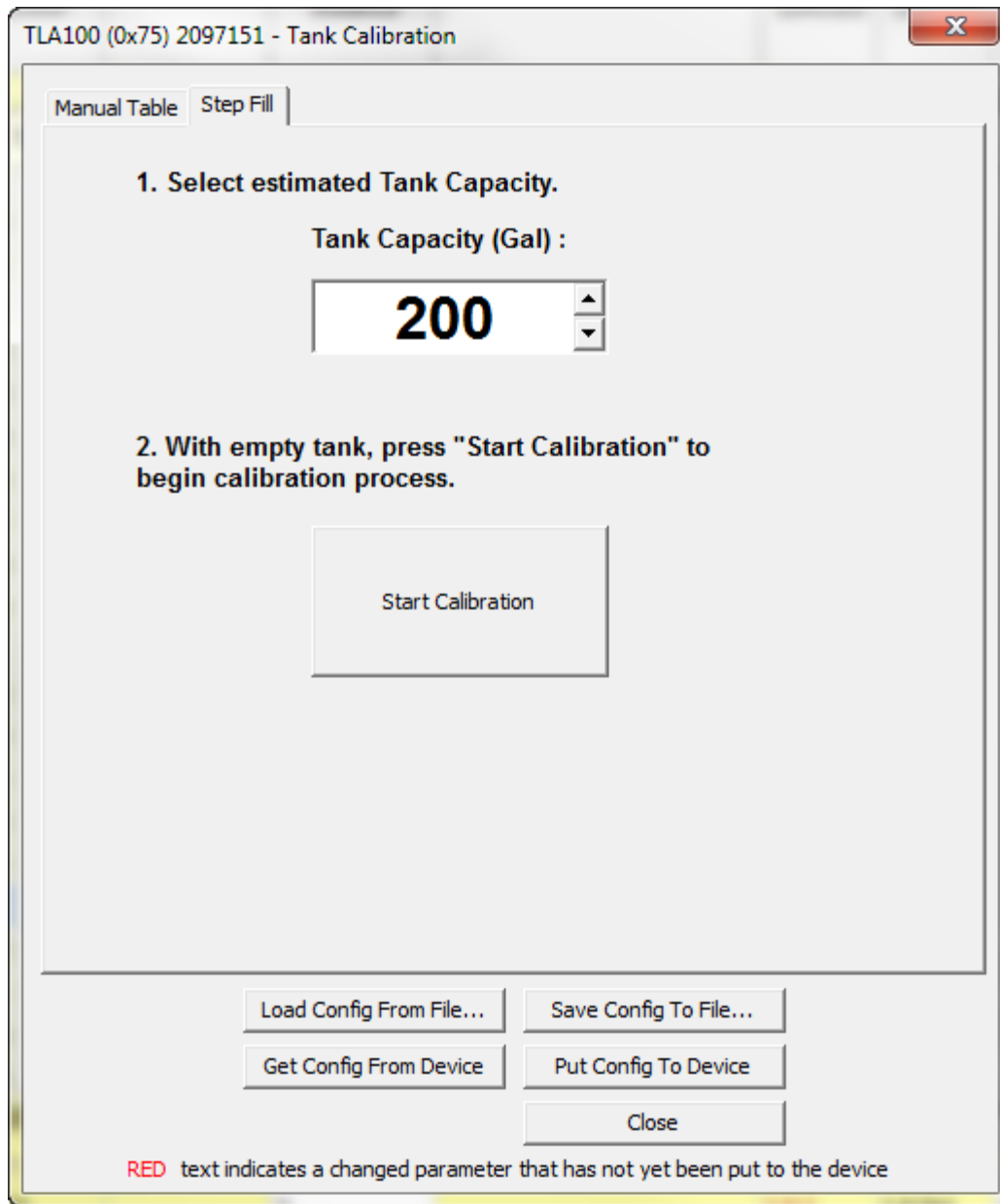


Figure 140 – TLA100 Tank Calibration – Step Fill Initial Window

To use this method, use the following steps:

- 1) Enter the estimated total capacity of the tank into the "Tank Capacity" text box.
- 2) Press the "Start Calibration" button. You will now see the Step Fill Calibration window displayed, as shown below.

Tank Calibration - Step Fill Calibration

Entry	Resistance	Level (%)	Volume (Gal)
1	-	-	-
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-
11	-	-	-
12	-	-	-
13	-	-	-
14	-	-	-
15	-	-	-
16	-	-	-

Tank Capacity (Gal) : **100.0**

Meas. Resistance (Ohms): **240**

Current Level (Gal) : **0.0**

Step 1 of 16

Complete

Abort

Figure 141 – TLA100 Step Fill Calibration Continuation Window

- 3) Enter “0” into the Current Level text box, and press “Step”. You have now entered the first point of the table.
- 4) Partially fill the tank. Enter the amount of fluid pumped into the tank into the “Current Level” text box, and press “Step” (if you make a mistake entering a level, you can press “Back” and re-enter the level. If you want to cancel the process, press the “Abort” button).
- 5) Repeat the previous step until the tank is completely filled.

Once you have entered the last point, where the tank is 100% full, press “Complete”. This will cause the table to be stored in the device.

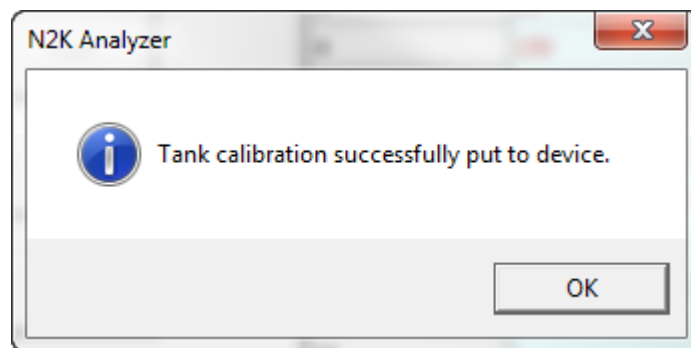


Figure 142 – TLA100 Tank Fill Confirmation Dialog Box

5.31.5 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

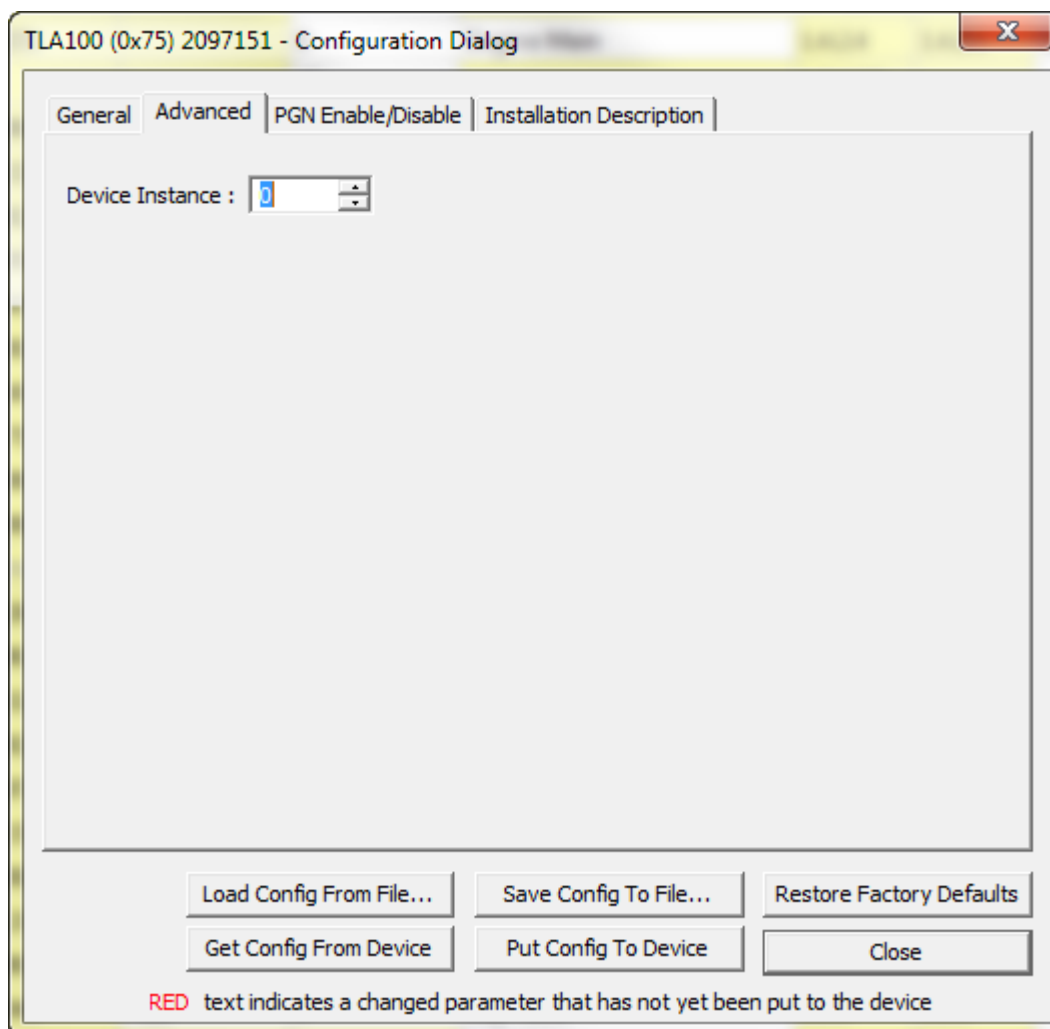


Figure 143 – TLA100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.31.6 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

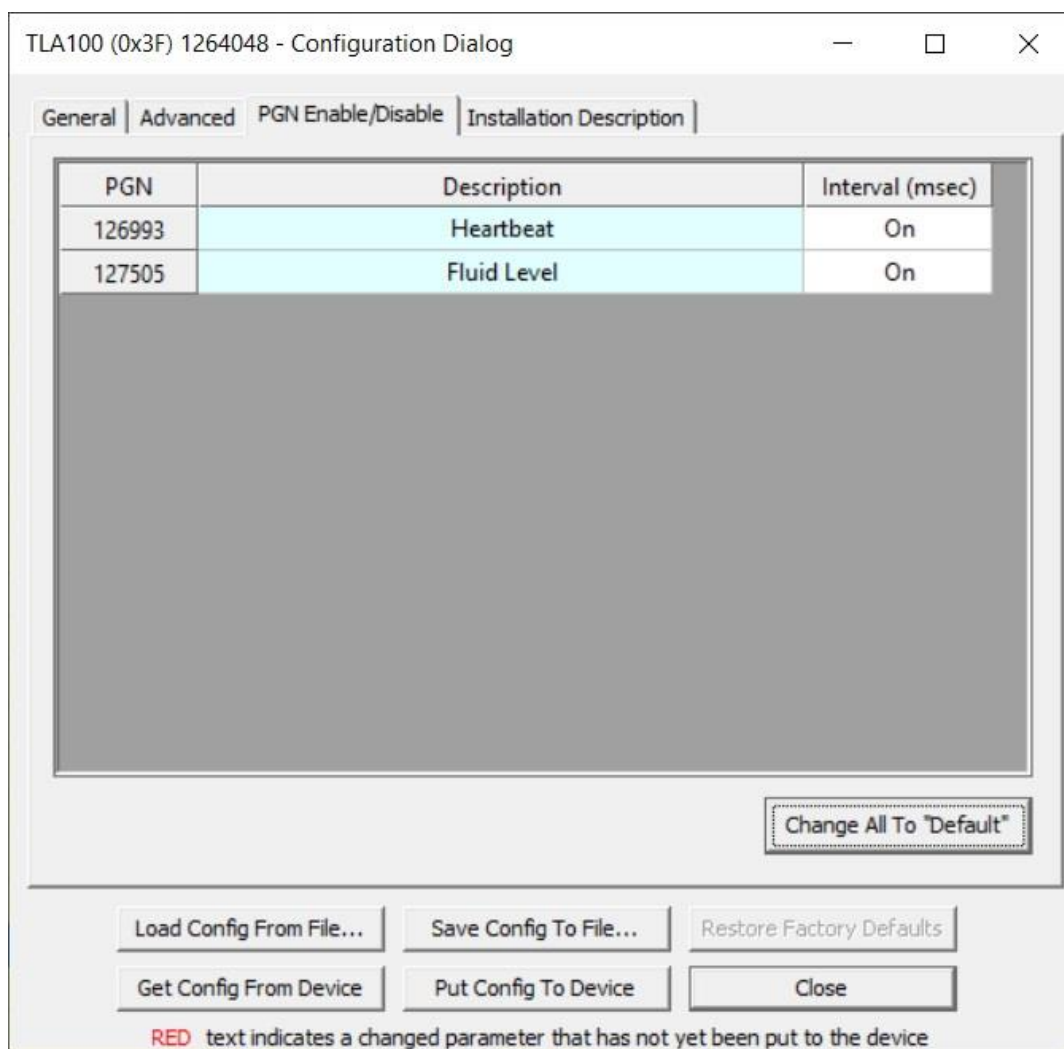


Figure 144 – TLA100 PGN Enable/Disable tab

5.31.7 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

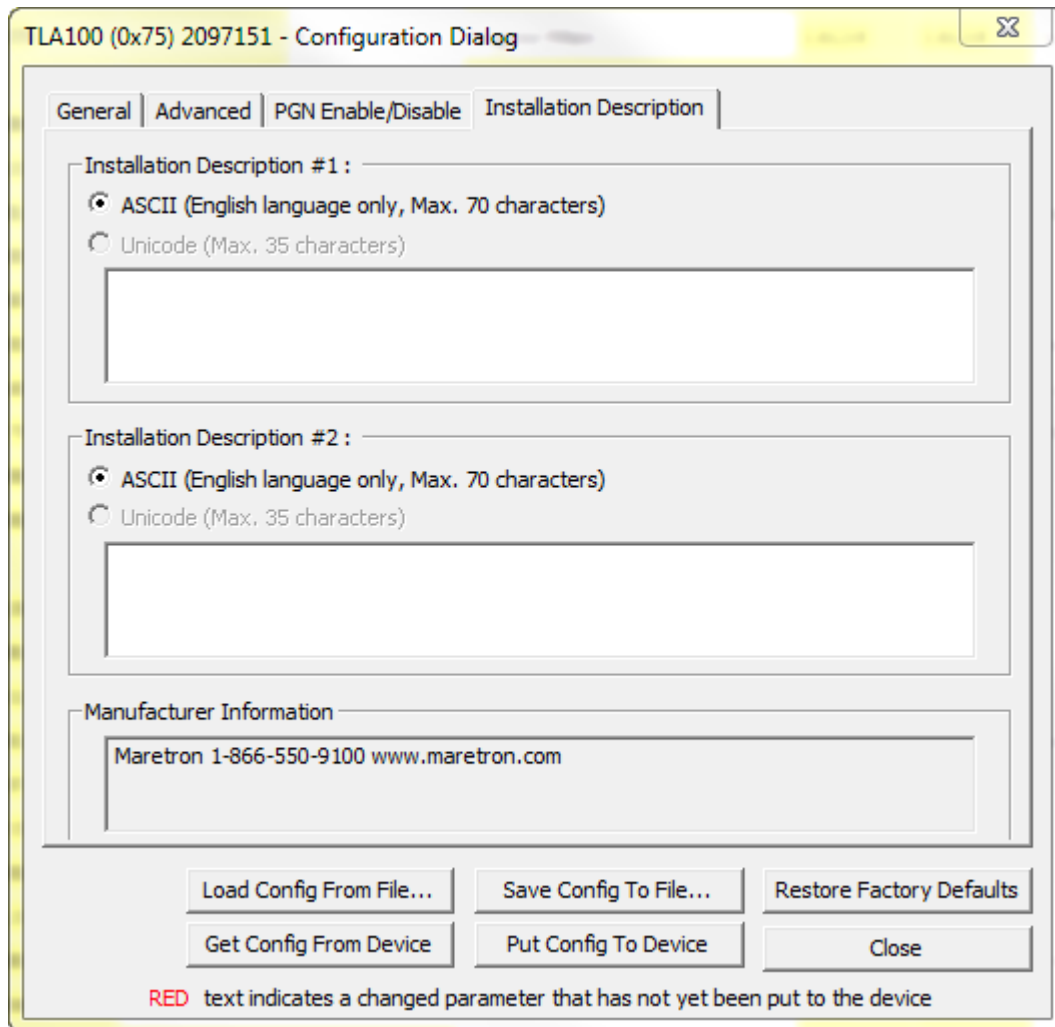


Figure 145 – TLA100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.32 TLM100, TLM150, TLM200

5.32.1 General Tab

This tab contains commonly-used configuration items.

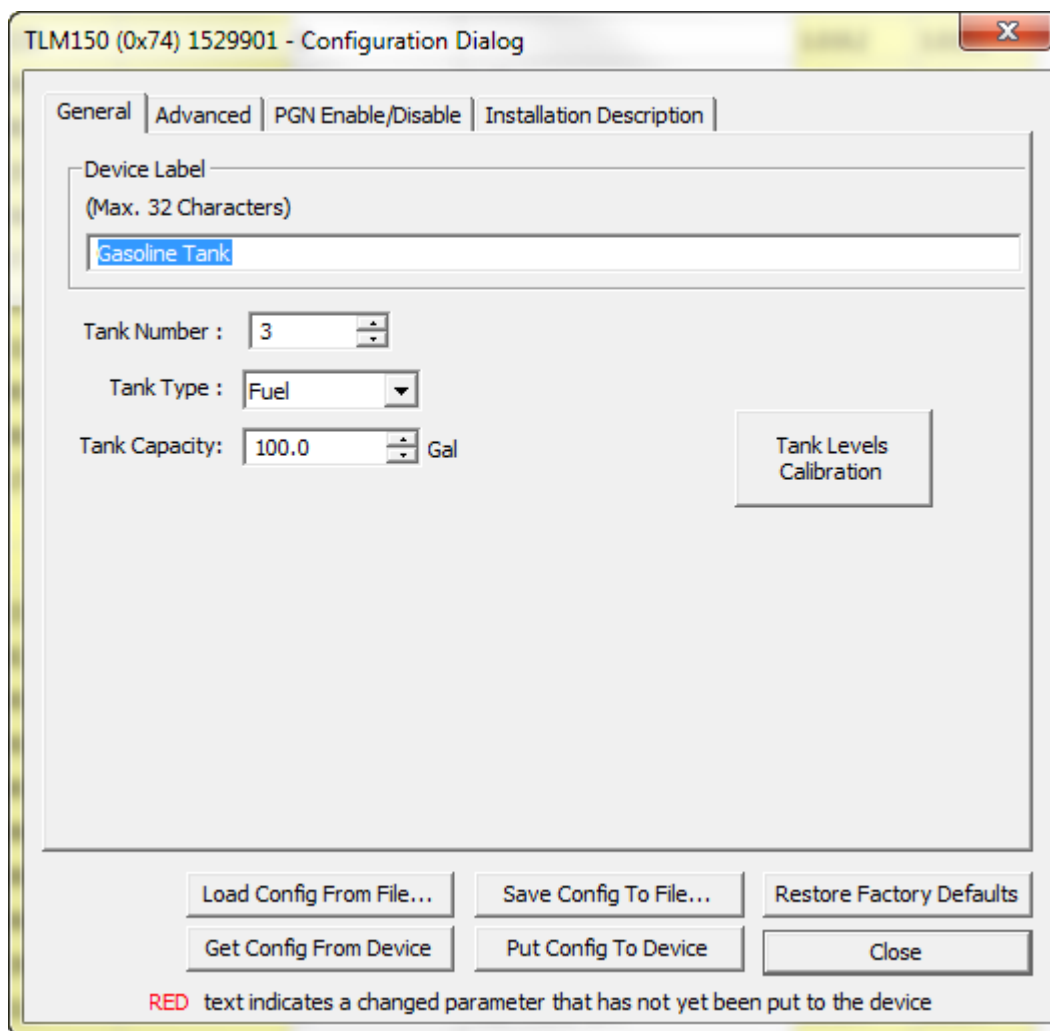


Figure 146 – TLMxxx General Tab

Device Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Tank Number

As shipped from the factory, the TLMxxx transmits the Tank Number as "0". The TLMxxx supports up to sixteen tanks (0 through 15) for a given type of tank, which means you can monitor up to 16 separate fuel tanks or 16 separate fresh water tanks.

Tank Type

As shipped from the factory, the TLMXXX transmits the tank type as "Fuel". You can reconfigure the TLMXXX for any of these tank types:

- Fuel

- Fresh Water
- Waste Water
- Live Well
- Oil
- Black Water
- Reserved-1 through Reserved-7 (if none of the above types apply)

Tank Capacity

In addition to indicating the fluid level within a tank, the TLMXXX also can be configured or programmed with the attached tank's capacity. This way, you will be able to view the tank's capacity as well as the amount of liquid remaining anywhere on the vessel where there is an NMEA 2000 compatible display.

5.32.2 Tank Levels Calibration

Pressing this button opens the Tank Calibration dialog, which is shown below.

There are two methods of calibration: Manual Table and Step Fill Table

5.32.3 Manual Table

Using the manual table method, you enter each entry of the measured parameter (distance from sensor face to fluid surface) and the level of fluid in the tank. The table may have as few as 2 entries (for a tank with rectangular cross-section) or as many as 16 entries (for a tank with a complex cross-section).

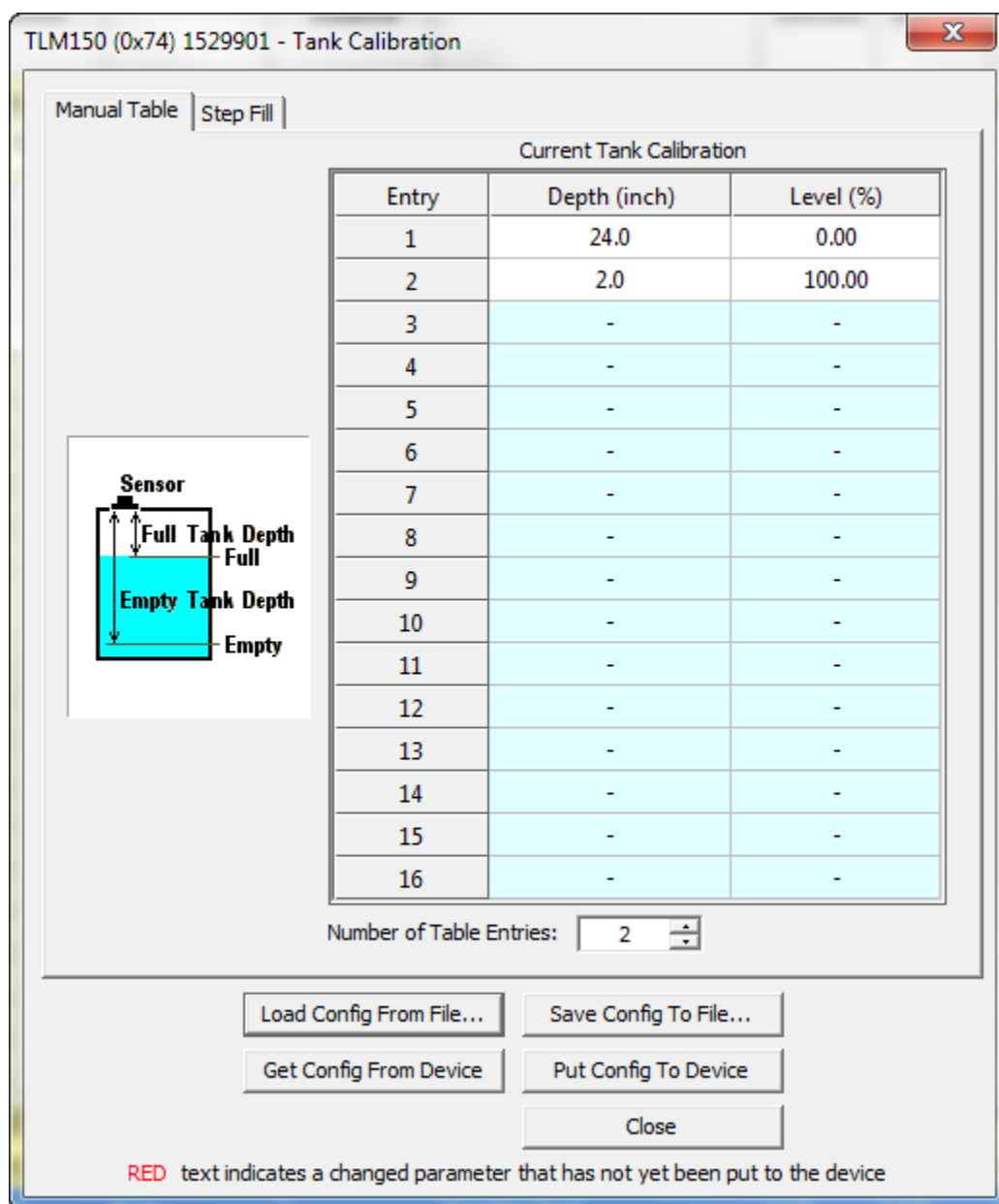


Figure 147 – TLMxxx Tank Calibration: Manual Table Tab

Number of Table Entries

You may choose the number of entries to be in the calibration table. Two is sufficient for a tank with a rectangular cross-section. The TLMXXX supports up to 16 table entries for supporting tanks with more complex cross-sections.

Current Tank Calibration

This grid shows the values of the tank calibration table. Each line of the grid has two entries:

- 1) Distance – this is the distance from the face of the ultrasonic sensor to the surface of the fluid
- 2) Level (%) – this is the percent full the tank is at the specific distance

5.32.4 Step Fill Table

In the Step Fill Table method, you start with an empty tank, and then fill the tank with fluid, stopping at intermediate points to enter the amount of fluid put into the tank thus far, ending once the tank is full. You may enter between two and sixteen calibration points.

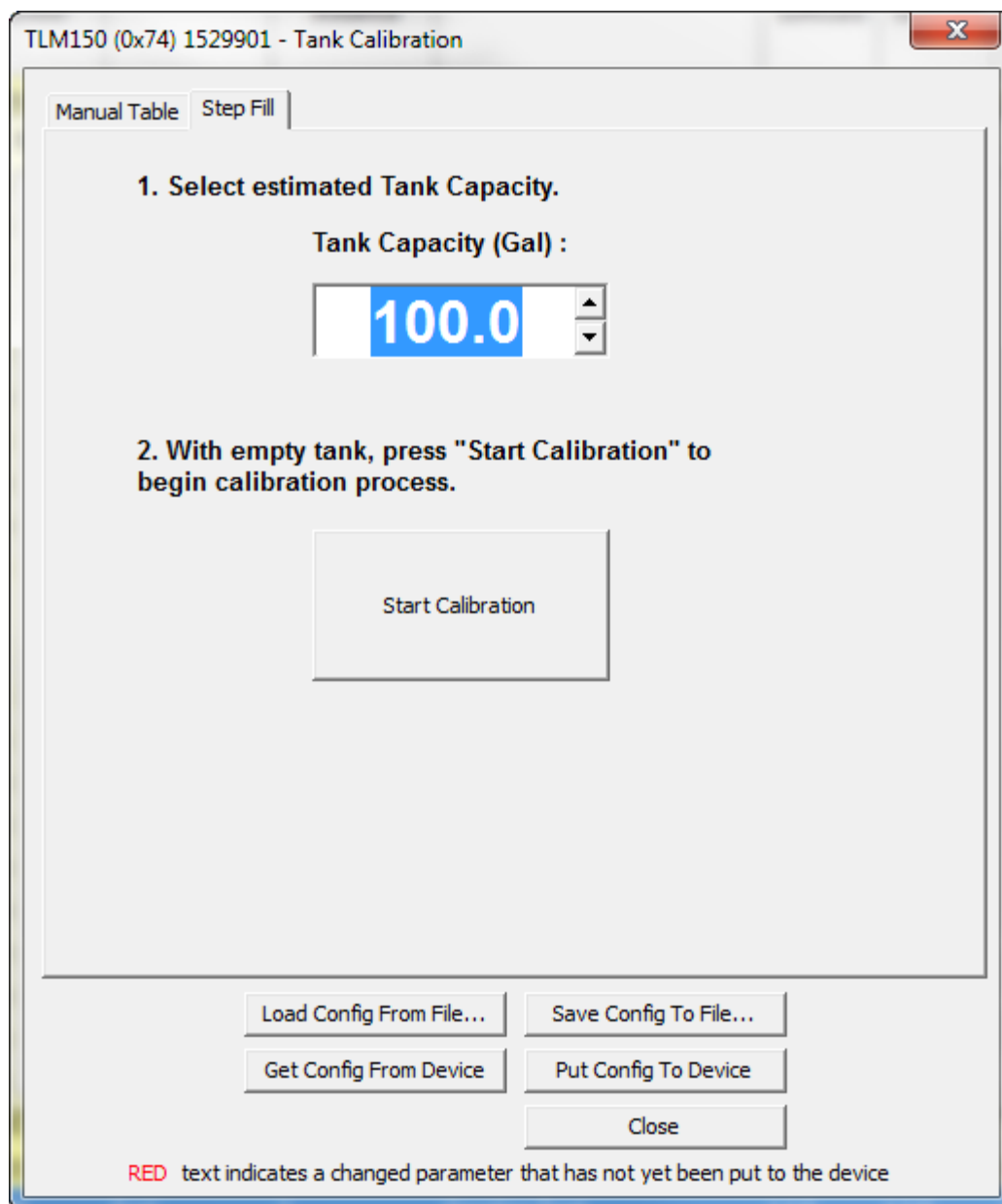


Figure 148 – TLMxxx Tank Calibration – Step Fill Initial Window

To use this method, use the following steps:

- 1) Enter the estimated total capacity of the tank into the “Tank Capacity” text box.
- 2) Press “Start Calibration”. You will now see the Step Fill Calibration window displayed, as shown below.

Tank Calibration - Step Fill Calibration

Current Tank Calibration

Entry	Depth (")	Level (%)	Volume (Gal)
1	-	-	-
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-
11	-	-	-
12	-	-	-
13	-	-	-
14	-	-	-
15	-	-	-
16	-	-	-

Tank Capacity (Gal) :
100.0

Measured Depth (\") :
40.9

Current Level (Gal) :
0.0

Step 1 of 16

Complete

Abort

Figure 149 – TLMxxx Step Fill Calibration Continuation Window

- 3) Enter “0” into the Current Level text box, and press “Step”. You have now entered the first point of the table.
- 4) Partially fill the tank. Enter the amount of fluid pumped into the tank into the “Current Level” text box, and press “Step” (if you make a mistake entering a level, you can press “Back” and re-enter the level. If you want to cancel the process, press the “Abort” button).
- 5) Repeat the previous step until the tank is completely filled.

Once you have entered the last point, where the tank is 100% full, press “Complete”. This will cause the table to be stored in the device.

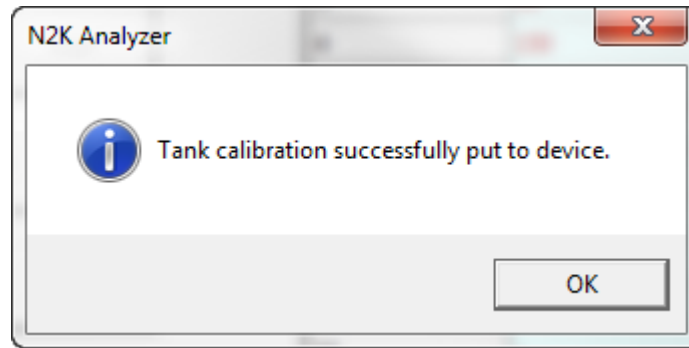


Figure 150 – TLMxxx Tank Calibration Conformation Dialog Box

5.32.5 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

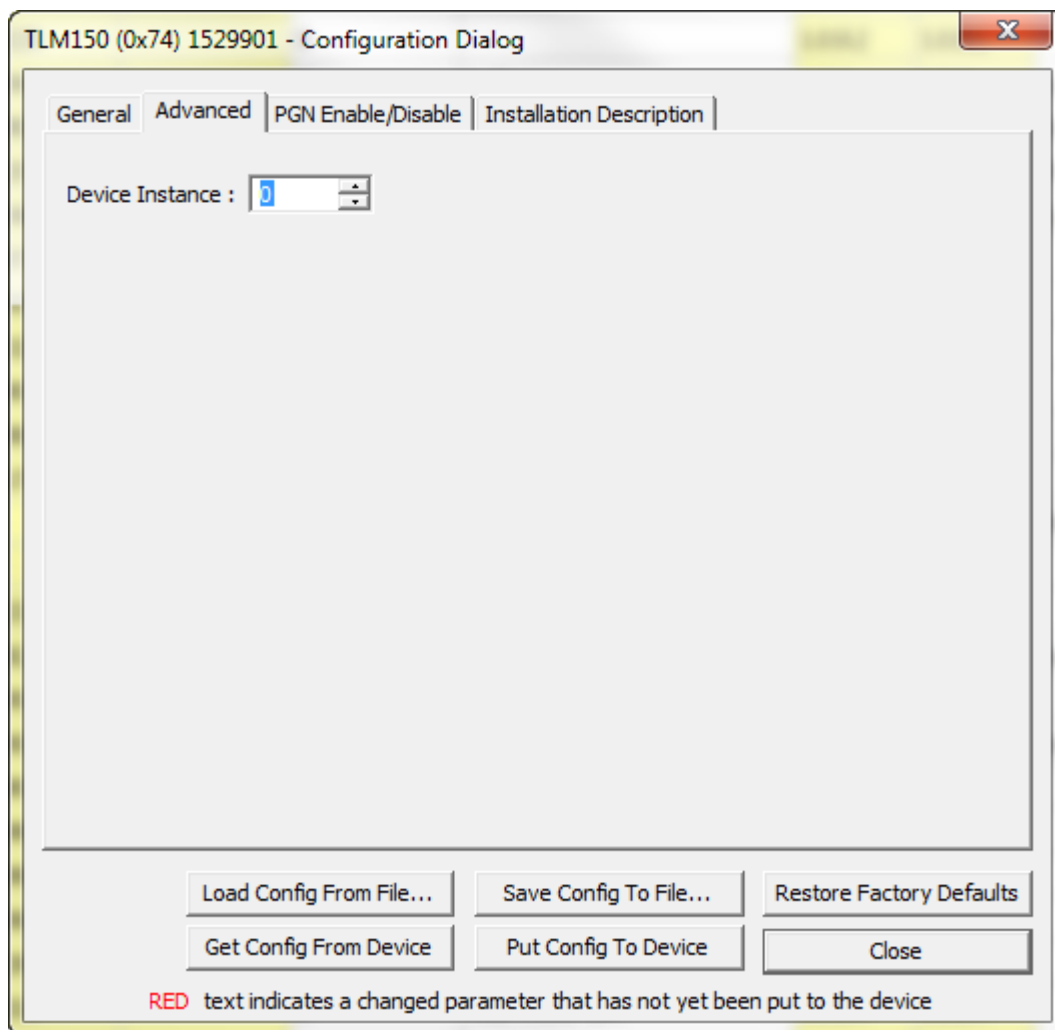


Figure 151 – TLMxxx Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.32.6 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

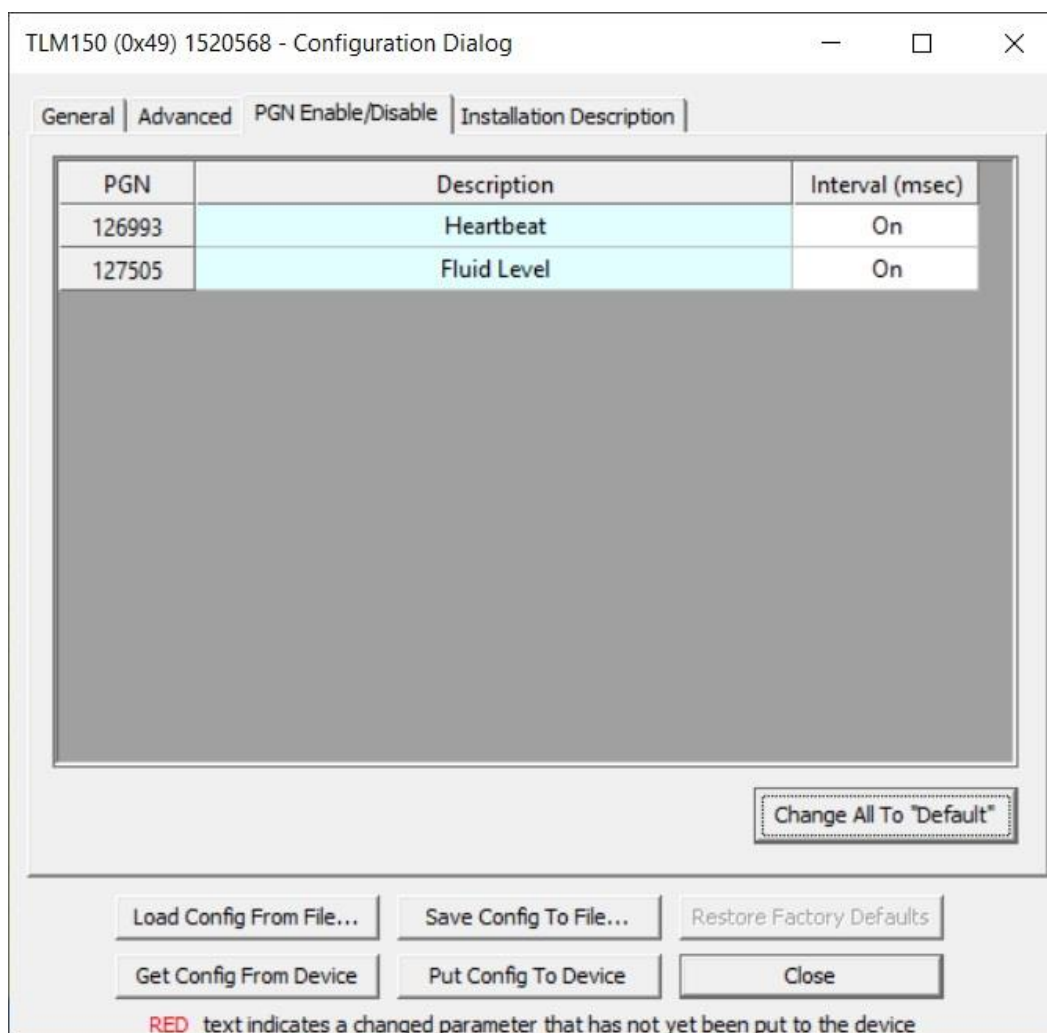


Figure 152 – TLMxxx PGN Enable/Disable tab

5.32.7 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

TLM150 (0x74) 1529901 - Configuration Dialog

General | Advanced | PGN Enable/Disable | **Installation Description**

Installation Description #1 :

☒ ASCII (English language only, Max. 70 characters)

☐ Unicode (Max. 35 characters)

Tender Gasoline Tank

Installation Description #2 :

☒ ASCII (English language only, Max. 70 characters)

☐ Unicode (Max. 35 characters)

Installed 2013

Manufacturer Information

Maretron 1-866-550-9100 www.maretron.com

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 153 – TLMxxx Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.33 TMP100

5.33.1 General Tab

This tab contains commonly-used configuration items.

Configuration Dialog for TMP100 (0xCC) 1480009. The General tab is active, showing fields for Device Label, Channel #0 through #5, Instance, Source, and Label. Buttons at the bottom include Load Config From File..., Save Config To File..., Restore Factory Defaults, Get Config From Device, Put Config To Device, and Close. A red text note at the bottom states: RED text indicates a changed parameter that has not yet been put to the device.

Figure 154 – TMP100 General Tab

Device Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Channel #x Instance

Each temperature measurement with a given source must have a unique instance number associated with it. This enables monitoring software and displays to distinguish different temperature measurements from one another. For example, if a channel is configured to transmit a source type of Exhaust Gas Temperature and the instance for that channel is set to a value of 0, then no other Exhaust Gas Temperature measurement on the network may use an instance number of 0.

Channel #x Source

You must configure the TMP100 as to what type of temperature measurement it is transmitting. Possible values include:

- Sea Temperature
- Outside Temperature
- Inside Temperature
- Engine Room Temperature
- Main Cabin Temperature
- Live Well Temperature
- Bait Well Temperature
- Refrigeration Temperature
- Heating System Temperature
- Dew Point Temperature
- Wind Chill Temperature, Apparent
- Wind Chill Temperature, Theoretical
- Heat Index Temperature
- Freezer Temperature
- Exhaust Gas Temperature
- Shaft Seal Temperature
- User Defined Temperature #129-#144.

You may also disable the channel by choosing the “Disabled” value into this field.

Channel #x Label

Each channel that can be monitored by the TMP100 may be programmed with a text label that will be displayed in monitoring software and displays that recognize labels, such as the N2KView Vessel Monitoring System and the Maretron DSM series displays. The label will let you assign an easy-to-remember text label (example: “Forward Bilge Pump”) to make it easy for you to identify the device as you are configuring the monitoring software or display, as well as when alerts are generated.

5.33.2 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

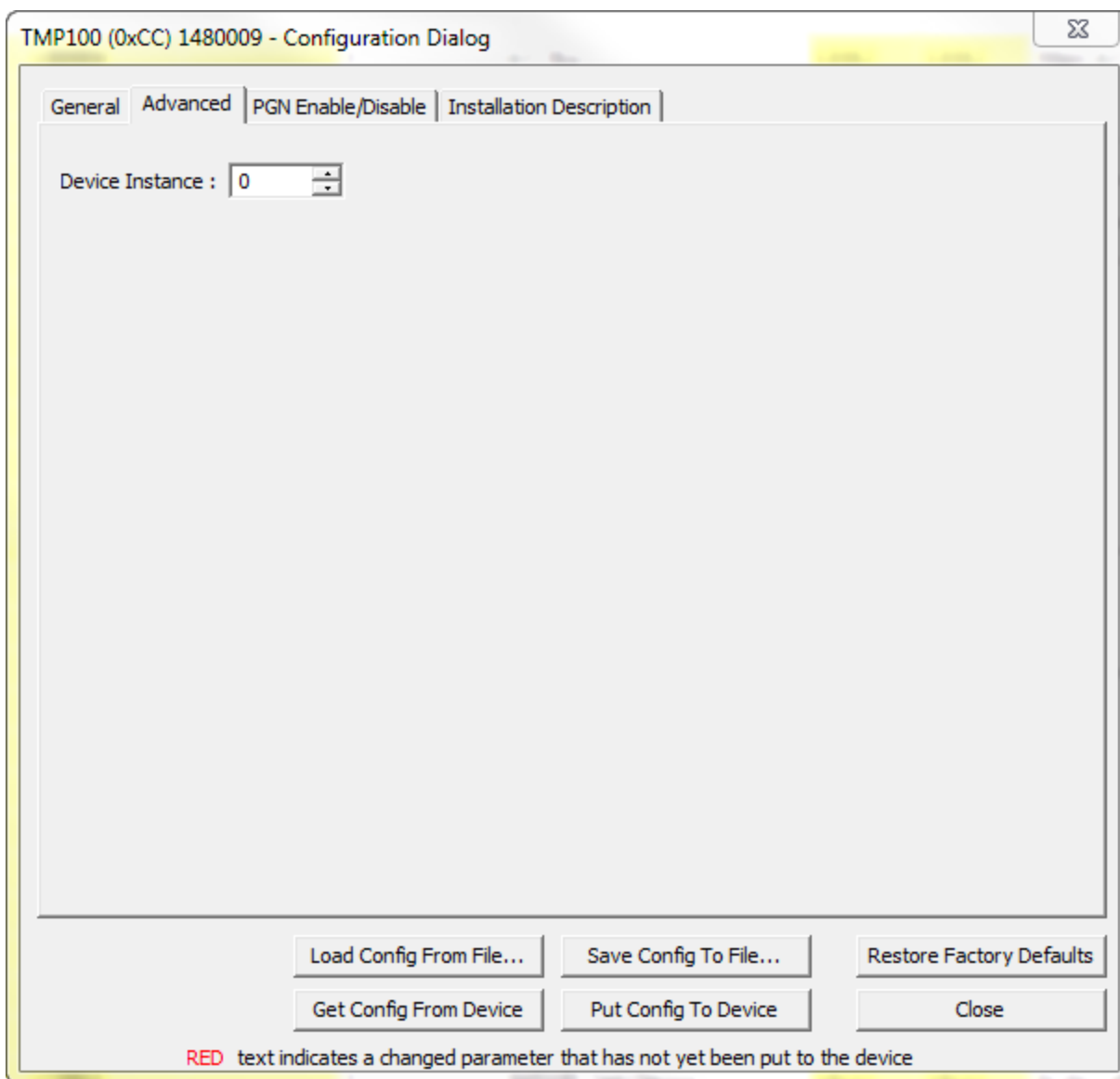


Figure 155 – TMP100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.33.3 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN's transmitted by the device will appear. The mode column will read "On", if the device is currently transmitting the message, or "Off", if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

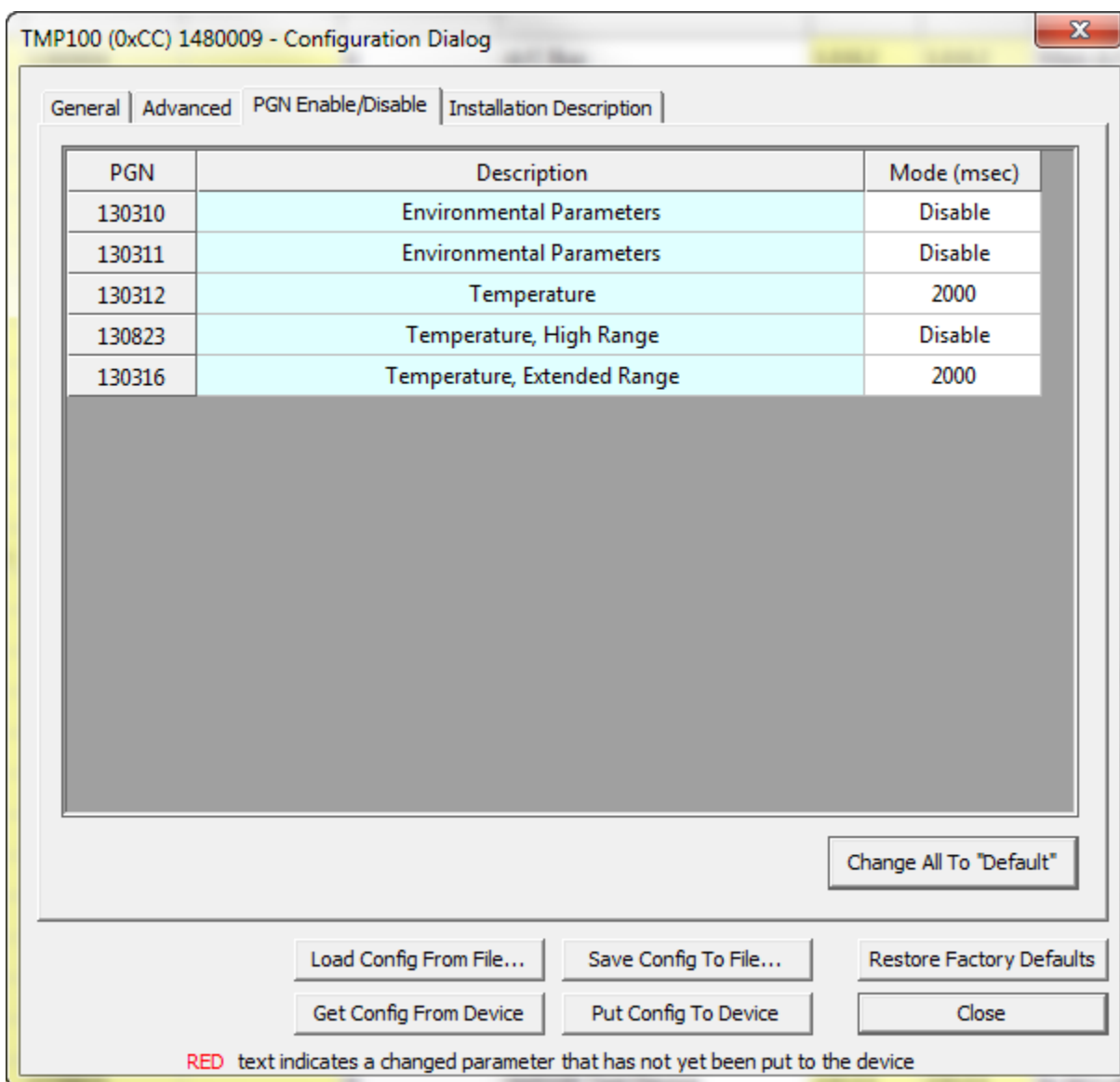


Figure 156 – TMP100 PGN Enable/Disable tab

5.33.4 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

TMP100 (0x4B) 1481724 - Configuration Dialog - Lab 04-12-21 (1)

General | Advanced | PGN Enable/Disable | **Installation Description**

Installation Description #1 :
☒ ASCII (English language only, Max. 70 characters)
☐ Unicode (Max. 35 characters)

Installation Description #2 :
☒ ASCII (English language only, Max. 70 characters)
☐ Unicode (Max. 35 characters)

Manufacturer Information

Load Config From File... Save Config To File... Restore Factory Defaults
Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 157 TMP 100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.34 USB100

5.34.1 General Tab

This tab contains commonly-used configuration items.

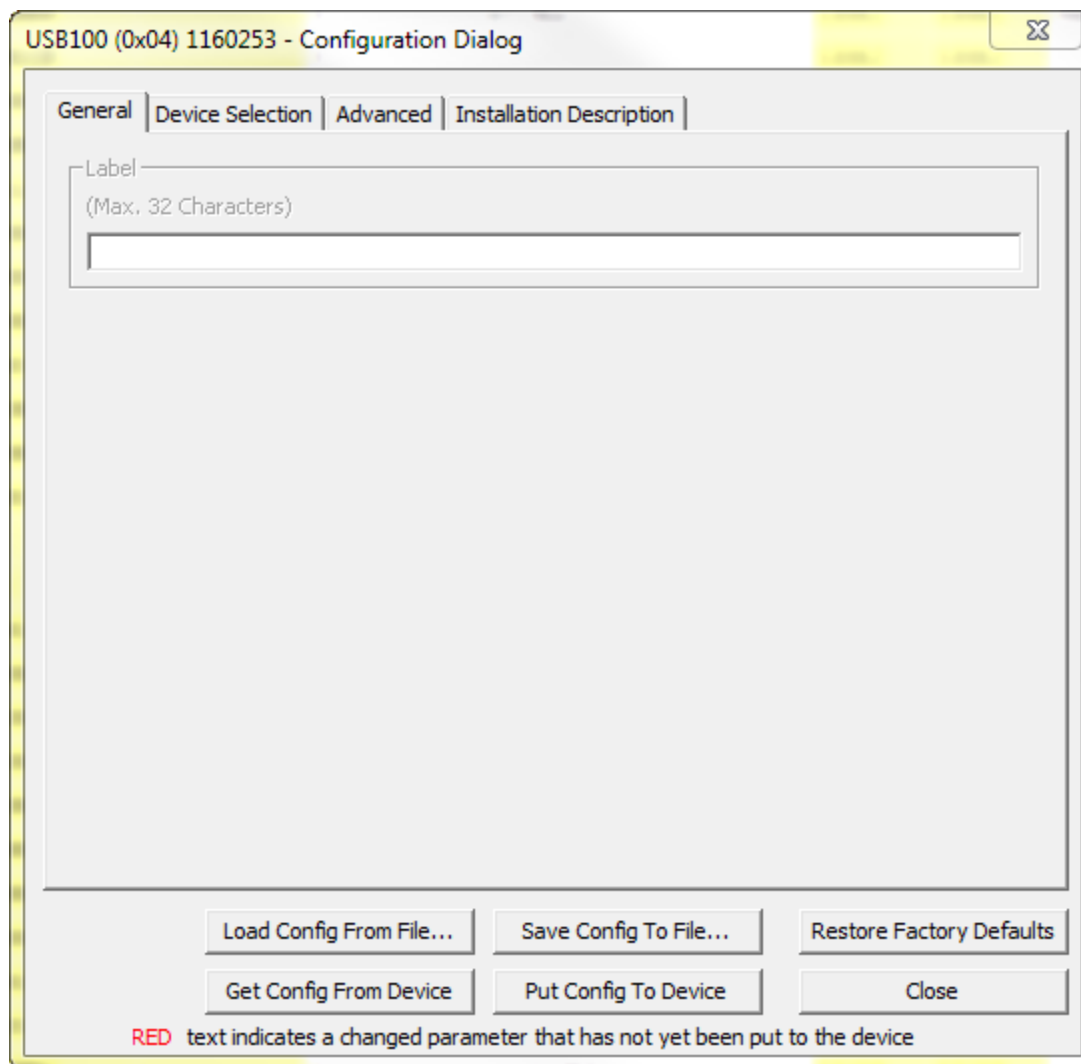


Figure 158 – USB100 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

5.34.2 Device Selection Tab

The Maretron NMEA 2000 to NMEA 0183 gateway (USB100) can be configured to select which NMEA 2000 devices are selected for display on the computer attached to the USB

interface of the USB100. In this manner, multiple devices of the same type may be used on a NMEA 2000 network in a fail-safe configuration.

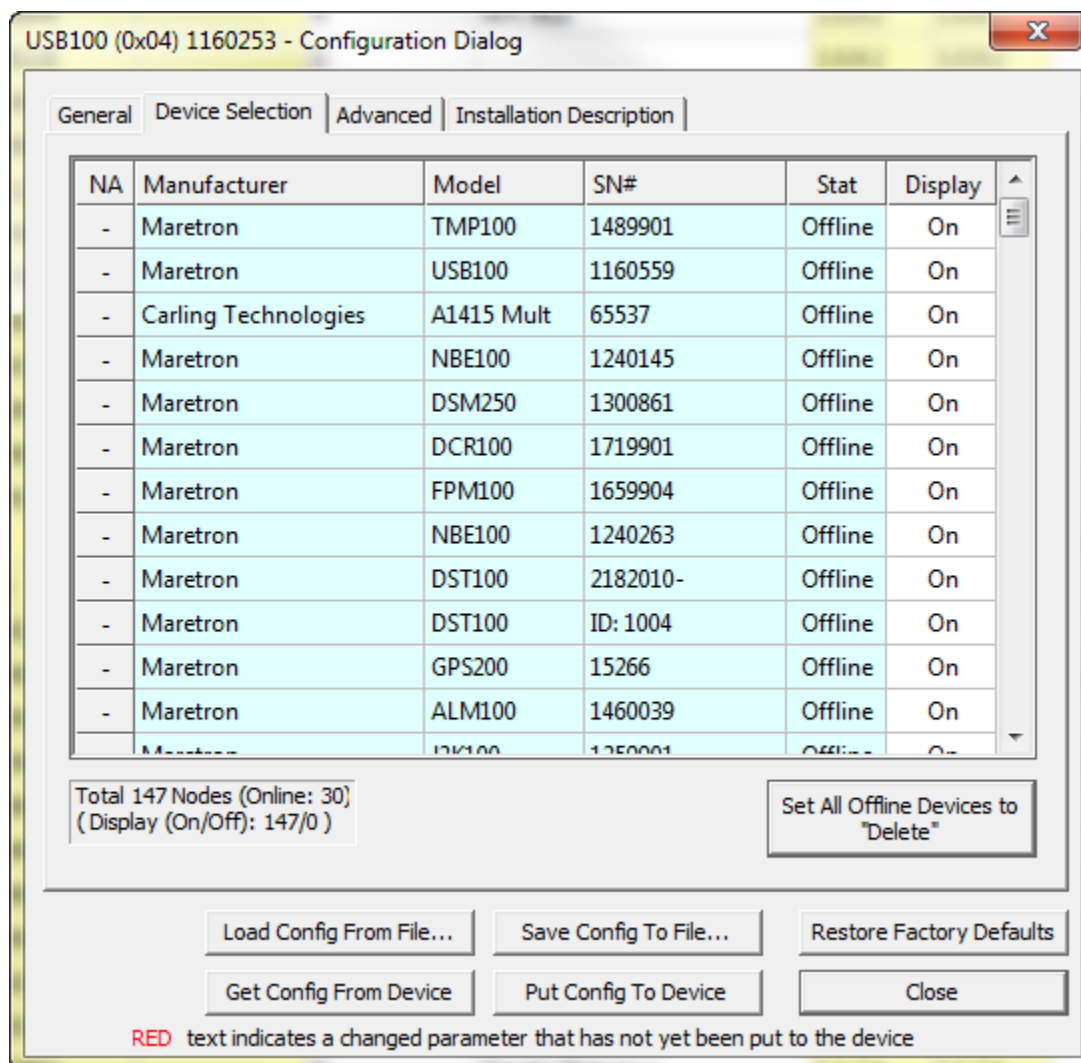


Figure 159 – USB100 Device Selection Tab

The Device Selection Tab shows the following columns:

- The “**NA**” column of the menu displays the node address the device is using.
- The “**Manufacturer**” column of the menu displays the manufacturer of the device.
- The “**Model**” column displays the model number of the device.
- The “**SN#**” column displays the serial number of the device, so that any of two or more devices of the same manufacturer and model number may be distinguished from one another.
- The “**Stat**” column indicates whether the device is currently connected to the bus and is responding to queries (“Online”), or has been disconnected from the bus, has lost power, or for some other reason is not responding to queries (“Offline”).
- The “**Display**” column indicates whether data from that device is accepted for display by the USB100 (“On”) or that the USB100 ignores data transmitted by this device (“Off”).

You may click on this field to change its value. The USB100 will retain information on devices that have been removed from the bus or powered down (“Offline”) so that when they are placed back on the bus, they will assume their prior “Display” setting.

5.34.3 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

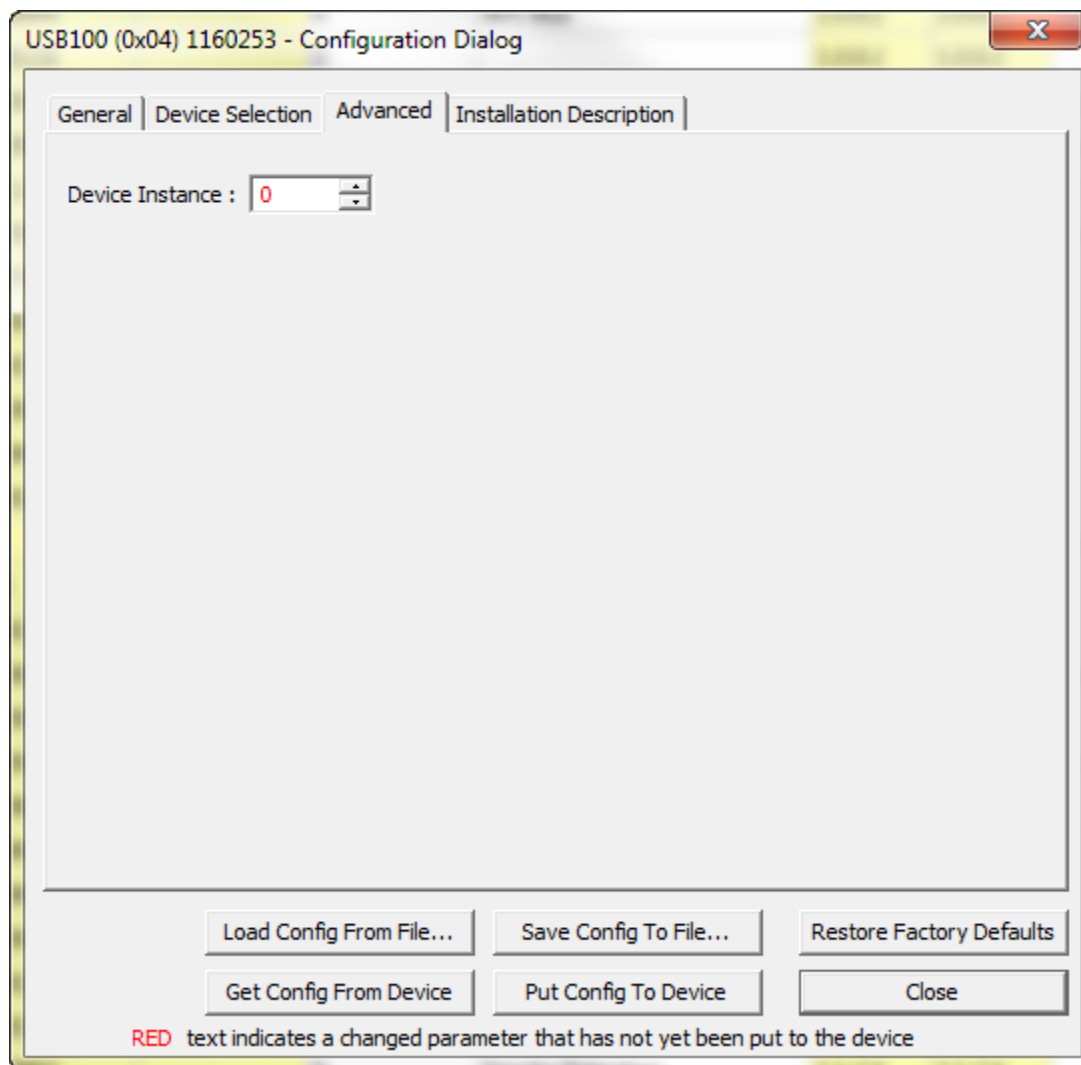


Figure 160 – USB100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

5.34.4 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

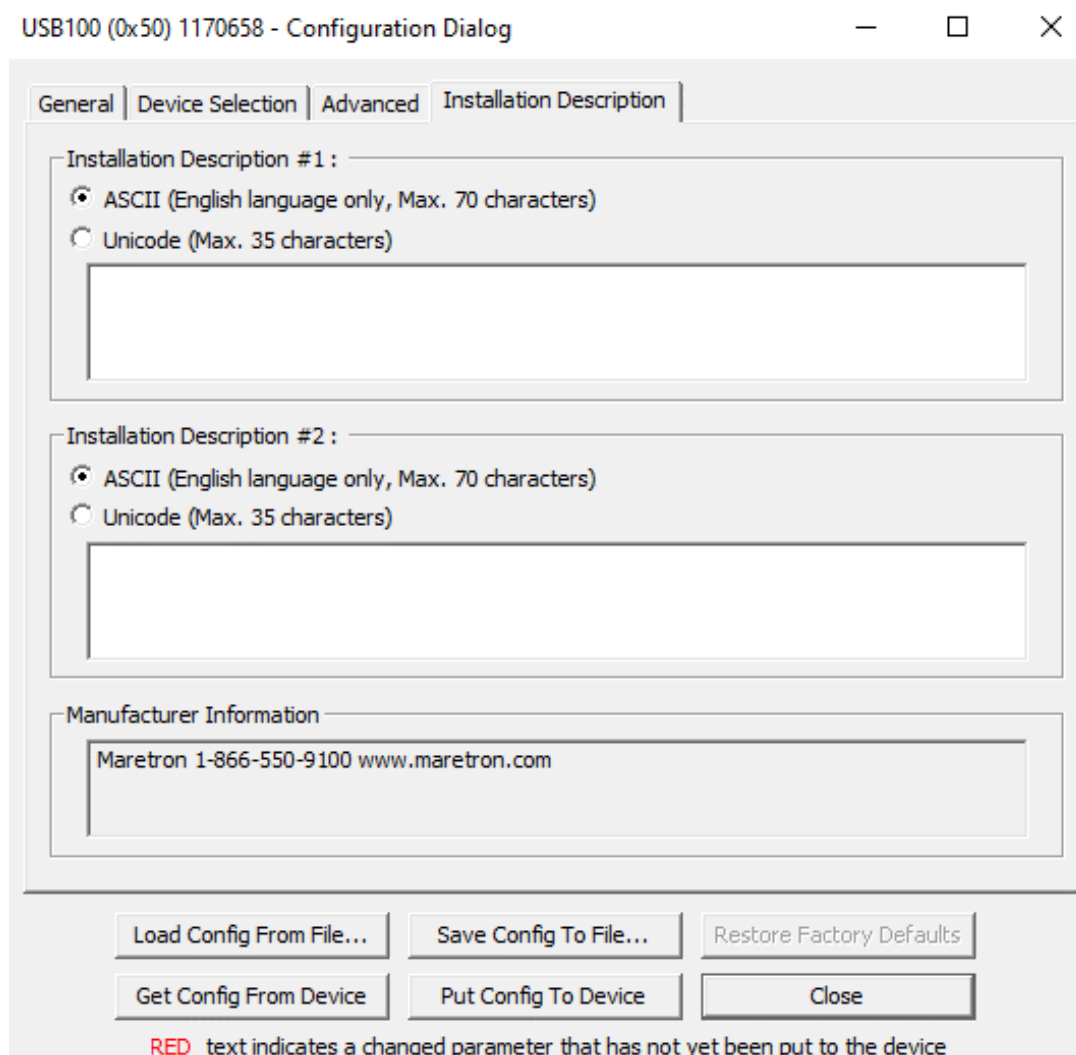


Figure 161 – USB100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.35 VMM6

The VMM6 is a module which contains 6 rocker switches that is attached to the NMEA 2000 network. The top and bottom positions of each switch have an individual status output. Each switch has an LED located behind the top and the bottom of each switch. Each LED can indicate the status of a controlled load on the network or as an always-on backlight.

5.35.1 General Tab

This tab contains all VMM6 configuration items.

VMM6 (0x82) 1278560 - Configuration Dialog

Instance: 51

Switch #1 LED

Positions: 2

Top Data Instance: 5 Indicator: 0 Use As Backlight: ON

Bottom Data Instance: 36 Indicator: 1 Use As Backlight: OFF

Switch #2 LED

Positions: 2

Top Data Instance: 0 Indicator: 0 Use As Backlight: ON

Bottom Data Instance: 36 Indicator: 2 Use As Backlight: OFF

Switch #3 LED

Positions: 2

Top Data Instance: 0 Indicator: 0 Use As Backlight: ON

Bottom Data Instance: 33 Indicator: 5 Use As Backlight: OFF

Switch #4 LED

Positions: 2

Load Config From File... Save Config To File... Restore Factory Defaults

Get Config From Device Put Config To Device Close

RED text indicates a changed parameter that has not yet been put to the device

Figure 162 - VMM6 General Tab

Instance

This field indicates the data instance that will be transmitted with the switch status in the 127501 Binary Status Report status message. In the VMM6, the data instance always takes the same value as the device instance.

Switch #n

The VMM6 has six switches. The top and bottom of each switch has a separate indicator output. These indicator outputs are mapped as follows:

Switch Number	Top Indicator Number	Bottom Indicator Number
1	1	2
2	3	4
3	5	6
4	7	8
5	9	10
6	11	12

Each switch has a “Positions” setting which controls its behavior, and settings which control the lighting of the LED's behind the top and the bottom of each switch.

Positions

There are two possible settings for this parameter that control the behavior of the switch:

2 Position: The rocker switch acts as a two-position toggle switch. When powered on, the indicator for the top of the switch will transmit the state OFF, and the indicator for the bottom of the switch will transmit the state ON, and these two values will remain the same until the top of the switch is pressed. When the top of the switch is pressed, the indicator for the top of the switch will transmit the state ON, and the indicator for the bottom of the switch will transmit the state OFF, and these two values will remain the same until the bottom of the switch is pressed. When the bottom of the switch is pressed, the indicator for the top of the switch will transmit the state OFF, and the indicator for the bottom of the switch will transmit the state ON, and these two values will remain the same until the top of the switch is pressed.

3 Positions: The rocker switch acts as two momentary switches. When powered on, the indicator for the top of the switch will transmit the state OFF, and the indicator for the bottom of the switch will also transmit the state OFF. When the top of the switch is pressed, the indicator for the top of the switch will transmit the state ON as long as the top of the switch is pressed. When the top of the switch is released, the indicator for the top of the switch will again transmit the state OFF. When the bottom of the switch is pressed, the indicator for the bottom of the switch will transmit the state ON as long as the bottom of the switch is pressed. When the bottom of the switch is released, the indicator for the bottom of the switch will again transmit the state OFF.

Top Data Instance, Indicator

If the “Use As Backlight” option is deselected:

- the LED behind the top of the switch will be lit whenever the indicator that corresponds to the selected data instance and indicator number is transmitting an ON state on the network. The LED on the top of the switch will be dark otherwise.

If the “Use As Backlight” option is selected:

- the value of these two fields will be ignored.

Top Use As Backlight

If this option is selected, then the LED behind the top of the switch will be lit at all times, and the “Data Instance” and “Indicator” fields will be ignored.

Bottom Data Instance, Indicator

If the “Use As Backlight” option is deselected:

- the LED behind the bottom of the switch will be lit whenever the indicator that corresponds to the selected data instance and indicator number is transmitting an ON state on the network. The LED on the bottom of the switch will be dark otherwise.

If the “Use As Backlight” option is selected:

the value of these two fields will be ignored.

Bottom Use As Backlight

If this option is selected, then the LED behind the bottom of the switch will be lit at all times, and the “Data Instance” and “Indicator” fields will be ignored.

5.36 WSO100

5.36.1 General Tab

This tab contains commonly-used configuration items.

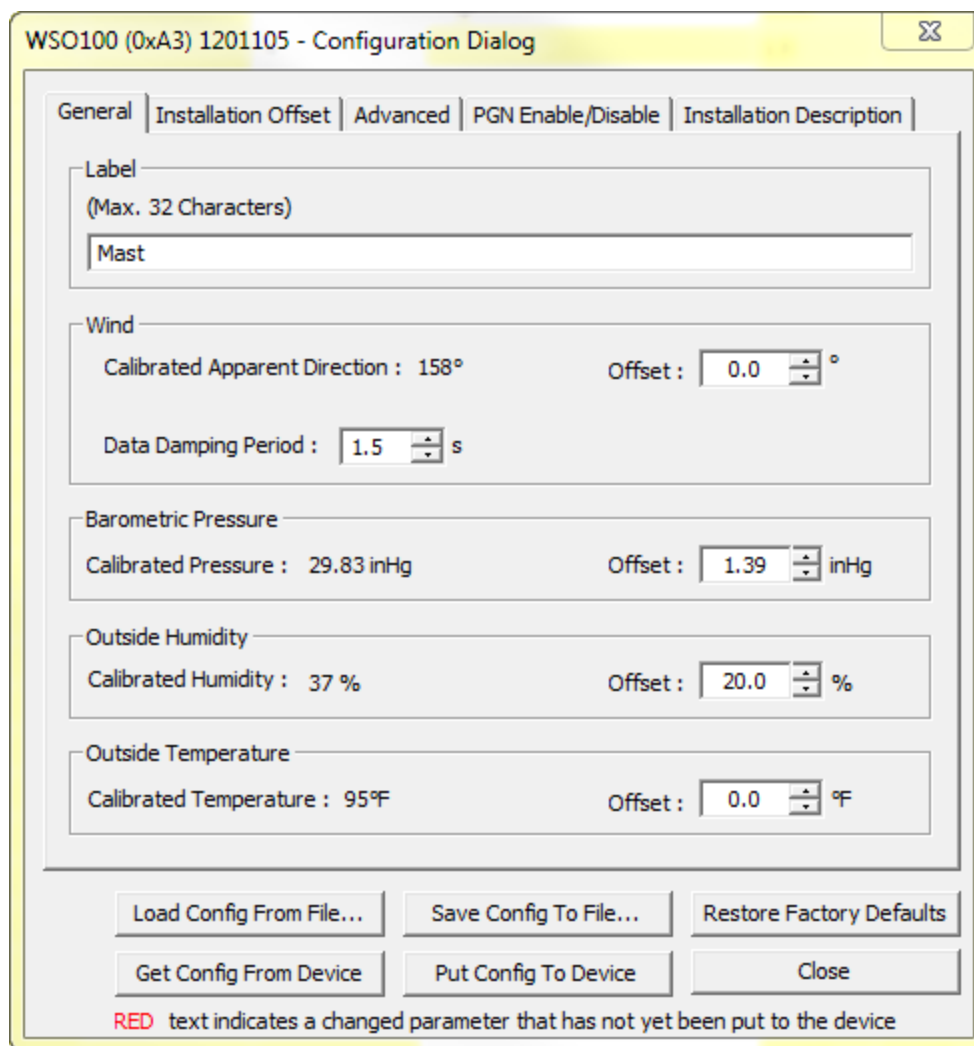


Figure 163 – WSO100 General Tab

Label

This text box allows you to assign a text label to the device. This label is visible in Maretron analysis and display products and allows you to easily identify the particular device.

Wind Calibrated Apparent Direction

This shows the apparent direction being transmitted by the WSO100, with the offset applied.

Wind Offset

You can program an offset value to be added to the raw apparent direction reading from the WSO100 sensor when it is transmitted over the NMEA 2000 network. You can use this offset value to compensate for the fact that the WSO100 may not be oriented exactly along the boat's keel.

Wind Data Damping Period

As shipped from the factory, the WSO100 uses a damping period of 1.5 seconds to filter short-term variations in wind speed and direction and provide a more stable, usable output. This damping period can be changed by the user to increase or decrease the amount of filtering.

Calibrated Barometric Pressure

If you wish to adjust the barometric pressure reading output by the WSO100 to match an independent source, you may adjust the barometric pressure output by the WSO100 using this parameter. This will apply a constant offset to the barometric pressure reading calculated by the WSO100 before it is transmitted over the NMEA 2000° network.

Barometric Pressure Offset

You can program an offset value to be added to the raw barometric pressure reading from the WSO100 sensor when it is transmitted over the NMEA 2000 network.

Calibrated Outside Humidity

If you wish to adjust the outside humidity reading output by the WSO100 to match an independent source, you may adjust the outside humidity output by the WSO100 using this parameter. This will apply a constant offset to the outside humidity reading calculated by the WSO100 before it is transmitted over the NMEA 2000° network.

Humidity Offset

You can program an offset value to be added to the raw humidity reading from the WSO100 sensor when it is transmitted over the NMEA 2000 network.

Calibrated Outside Temperature

If you wish to adjust the outside temperature reading output by the WSO100 to match an independent source, you may adjust the outside temperature output by the WSO100 using this parameter. This will apply a constant offset to the outside temperature reading calculated by the WSO100 before it is transmitted over the NMEA 2000° network.

Outside Temperature Offset

You can program an offset value to be added to the raw outside temperature reading from the WSO100 sensor when it is transmitted over the NMEA 2000 network.

5.36.2 Installation Offset Tab

The WSO100 comes from the factory with a preset orientation, so that mounting it with the orientation marks facing the bow of the vessel, the sensor will read 0° apparent wind angle when the vessel is sailing directly into the wind (please refer to the *WSO100 User's Manual* for details). However, the WSO100 can be installed in any orientation with respect to the vessel and any misalignment with respect to the factory preset can be easily compensated for using this tab Installation Offset calibration menu item.

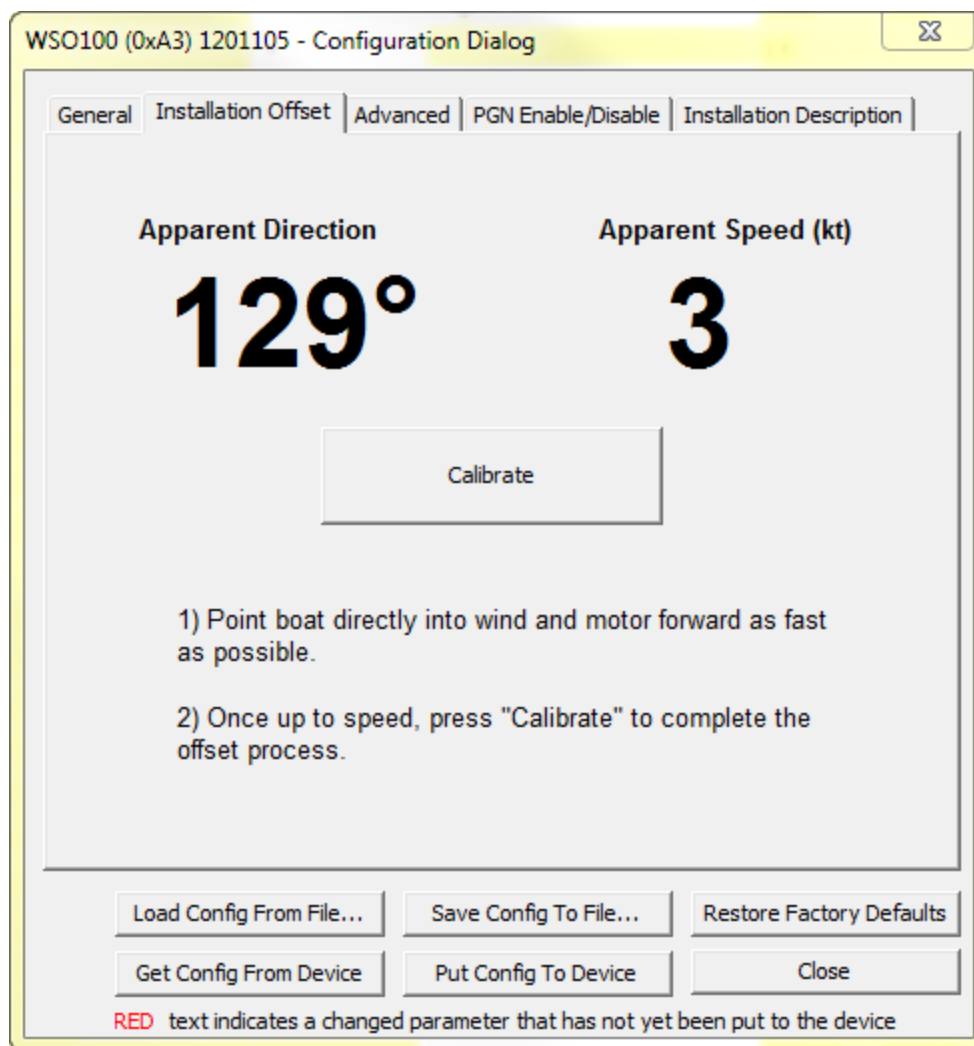


Figure 164 – WSO100 Installation Offset Tab

Calibrate Button

As shipped from the factory, the WSO100 will read 0° apparent wind direction when the wind blows into the sensor directly from the direction of the post nearest the black humidity sensor that protrudes from the bottom of the sensor. If the WSO100 is mounted with this post facing directly towards the bow of the boat, no adjustment is necessary; however, if the sensor is mounted in any other orientation, the installation offset can be used to compensate the apparent wind direction reading such that it will read 0° when the apparent wind is blowing directly into the bow of the vessel.

To calibrate the installation offset, first point the boat directly into any wind and motor forward into the wind. Then, press the "Calibrate" button. Once the installation offset has been set, the following window will appear:

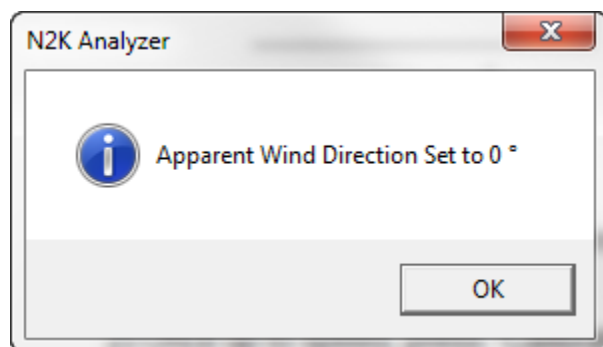


Figure 165 – WSO100 Installation Offset Calibration Confirmation Dialog Box

5.36.3 Advanced Tab

This tab contains entries that need to be changed only in specific cases; for instance, if there are multiple instances of this device on a network.

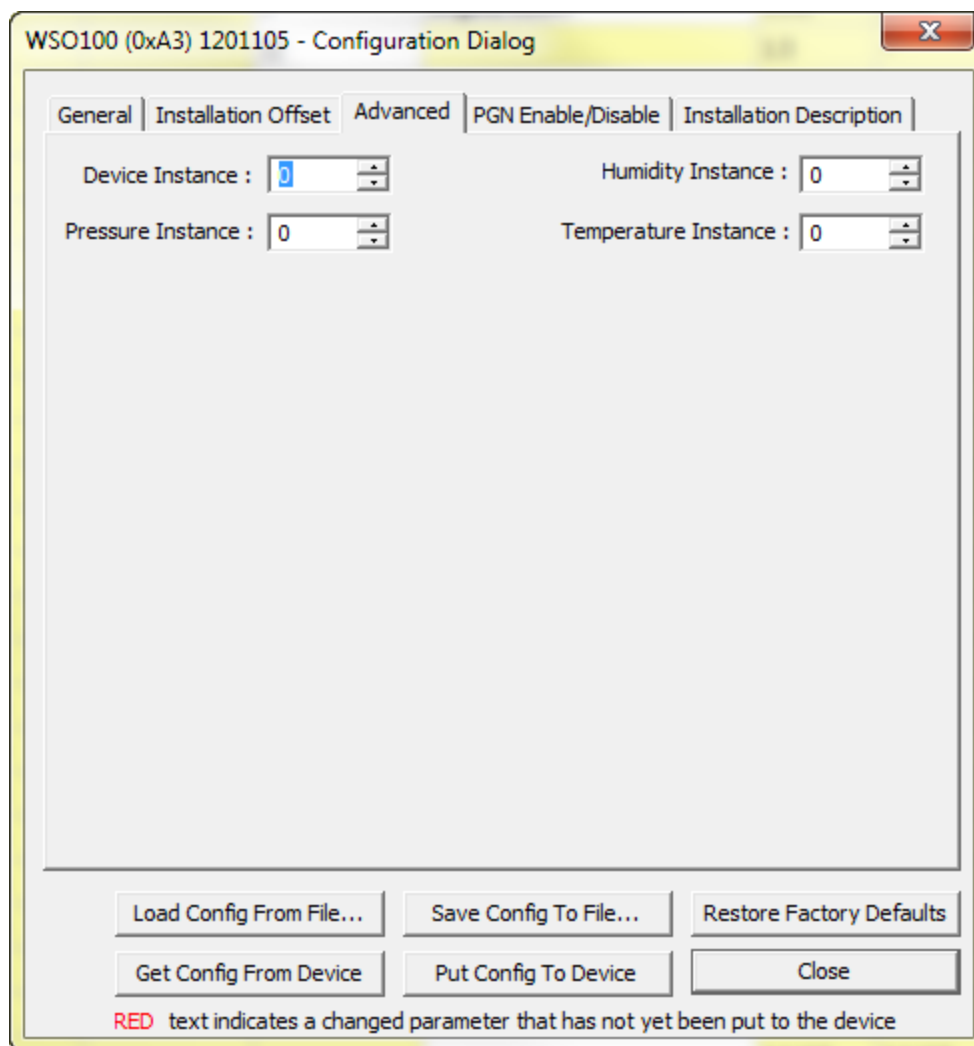


Figure 166 – WSO100 Advanced Tab

Device Instance

The device comes from the factory with the device instance value set to 0. If you have multiple of these devices on a network, you may find it necessary to set the device instances of other devices of this type so that they are different.

Pressure Instance

This entry allows you to configure the NMEA 2000 device instance for the air pressure transmitted in PGN 130314. You usually will not need to modify the default value of "0" unless you have multiple pressure sensors on the network.

Humidity Instance

This entry allows you to program the NMEA 2000 device instance for the humidity transmitted in PGN 130313. You usually will not need to modify the default value of "0" unless you have multiple humidity sensors on the network.

Temperature Instance

This entry allows you to program the NMEA 2000 device instance for the temperature transmitted in PGN 130312. You usually will not need to modify the default value of “0” unless you have multiple temperature sensors on the network. Note that the TMP100 module also generates these PGNs.

5.36.4 PGN Enable/Disable Tab

This tab allows you to enable or disable the transmission of the periodic messages output by the device. You may enable or disable the transmission of the messages or may program the time interval between transmissions of a specific message, for devices which support the programming of time intervals.

When you first open the PGN Enable/Disable tab, a list of periodic PGN’s transmitted by the device will appear. The mode column will read “On”, if the device is currently transmitting the message, or “Off”, if the message has not yet been detected from the device.

You may configure each periodic message with one of the following choices:

- 1) Disable – this will turn off the periodic transmission of this message
- 2) Default – this will turn on the periodic transmission of this message at the default rate
- 3) A numeric value that will turn on the periodic transmission of this message at the specified rate

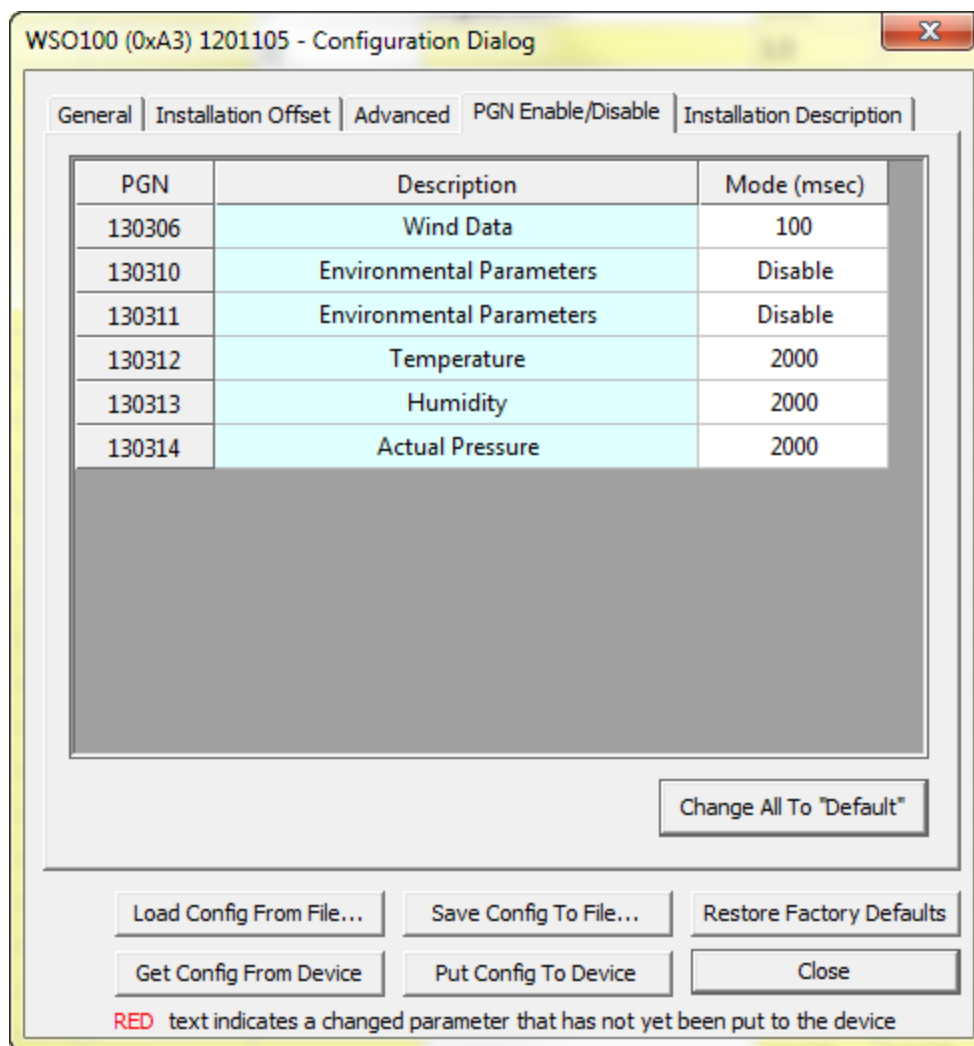


Figure 167 – WSO100 PGN Enable/Disable tab

5.36.5 Installation Description Tab

This tab allows you to set values for the installation description properties of the device.

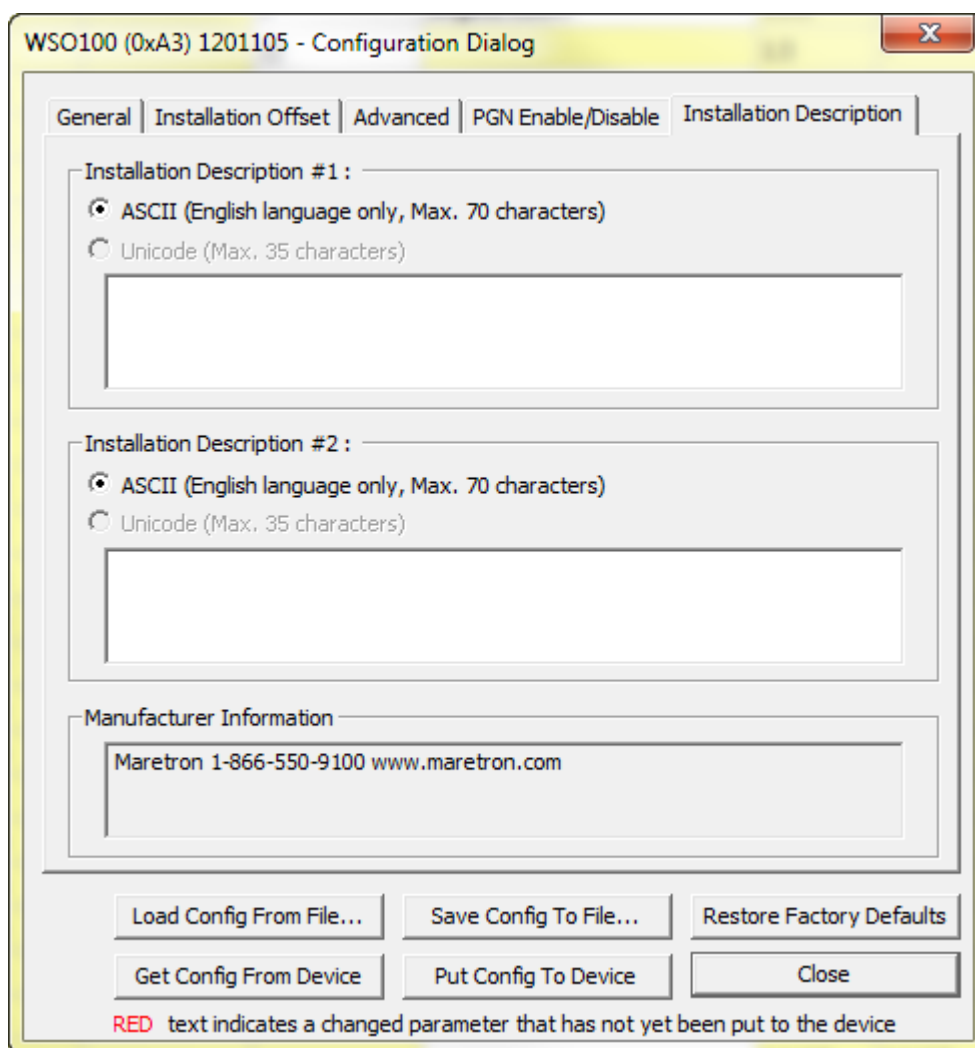


Figure 168 – WSO100 Installation Description Tab

Installation Description #1, #2

This device, along with all other Level A certified NMEA devices, has two user-entry 'Installation Description' fields. You may enter text into these fields with information specific to the device, such as date installed, the initials/name of the installer, the physical location of the device, etc.

5.37 DSM250 Emulator

For devices which do not support native N2KAnalyzer configuration, you may use the built-in DSM250 emulator, which you can access by selecting the *Analyze→DSM250 Viewing...* menu item. This emulator operates the same as the Maretron DSM250 Multifunction Display and is shown in Figure 169 below. Please refer to the *Maretron DSM250 Multifunction Display User's Manual* for details on configuring devices using the DSM250 emulator.



Figure 169 – DSM250 Viewing Window

5.37.1 Viewing and Changing Installation Description

You can view and change the installation description information which can be programmed into NMEA 2000 devices which support this capability by selecting the *Configure→Installation Descriptions* menu item. The Installation Descriptions dialog box shows the Installation Description #1 and Installation Description #2 fields. These are free-form text fields that may be programmed by the installer in devices that support field programming of this information. To set the value of one of these fields, type the desired information into the text box and click the OK button once you are finished. This will cause the entered value to be permanently programmed into the device's non-volatile memory.

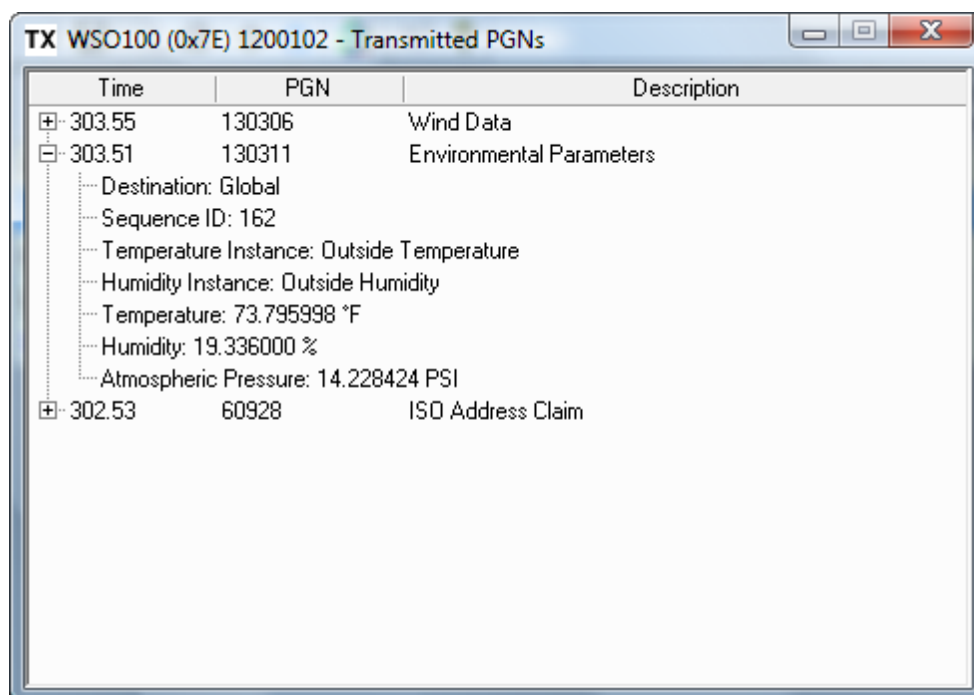
The image shows a 'Device Configuration Information' window. At the top, it displays device details: 'NA: 0x1A (26)', 'Model : DSM250', 'S/N : 1300003', and 'Device Class : Instrumentation/general systems (80)'. Below this are two sections for 'Installation Description'. Each section has radio buttons for 'ASCII (English language only, Max. 70 characters)' (which is selected) and 'Unicode (Max. 35 characters)'. Each section also has a large text input area. At the bottom is a 'Manufacturer Information' section with a text input area containing 'Maretron 1-866-550-9100 www.maretron.com'. 'Cancel' and 'OK' buttons are at the bottom right.

Figure 170 – Device Properties Window: Installation Description Tab

5.38 Viewing NMEA 2000 Messages

5.38.1 Using the Transmitted PGNs Window

You can view the messages transmitted by a device on the network by first left-clicking on the device in the device list window, and then either selecting the *Analyze→Transmitted PGNs* menu item or by right-clicking on the device and selecting the *Analyze Transmitted PGNs* menu item from the pop-up context menu. A window appears listing the PGN's transmitted by the device. The contents of the window are updated in real time. The messages appear one line per message. You can click on the “+” icon on the left side of the message to expand it and show the contents of the individual message fields. Click once more to collapse the message display into a single line.



Time	PGN	Description
303.55	130306	Wind Data
303.51	130311	Environmental Parameters
...	...	Destination: Global
...	...	Sequence ID: 162
...	...	Temperature Instance: Outside Temperature
...	...	Humidity Instance: Outside Humidity
...	...	Temperature: 73.795998 °F
...	...	Humidity: 19.336000 %
...	...	Atmospheric Pressure: 14.228424 PSI
302.53	60928	ISO Address Claim

Figure 171 – Transmitted PGNs Window

5.38.2 Analyzing NMEA 2000 Instancing

When configuring an NMEA 2000 network, it is important to ensure that all devices transmitting the same type of information (for example, Fuel tank level) are programmed with distinct instance numbers. This is so that a display device can correctly identify the source of the measurement.

There may be some cases where having two devices with the same instance numbers is desirable, specifically, when redundancy is desired. For example, you may choose to install two GPS antennas for redundancy. In that case, if both GPS antennas have the same device instance, one of the GPS antennas will be used, and if that antenna stops transmitting messages, the display can use the information from the second GPS antenna with the same instance number.

N2KAnalyzer can analyze the device information and network traffic to determine whether any conflicts exist. You can run this analysis function by selecting *Analyze* → *Instancing* menu item. After you select that menu item, you will see an introductory dialog box (shown in Figure 172 below).

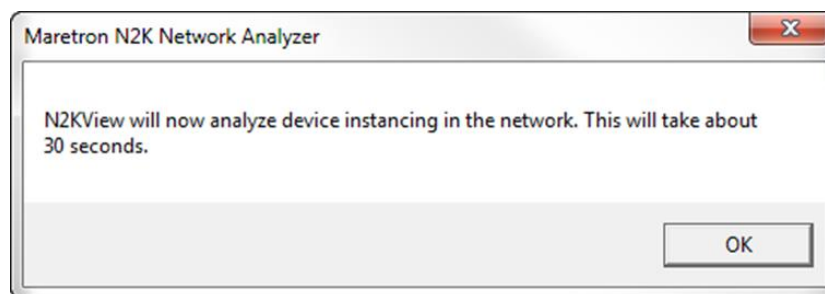


Figure 172 - Instancing Analyzer Introductory Dialog

Click the “OK” button to begin the analysis. Once you click “OK”, the dialog will close and the Instancing Analysis Results Window will appear. It will display any detected instancing conflicts as they occur, along with recommended actions to resolve the conflicts. The results window is shown in Figure 173 below.

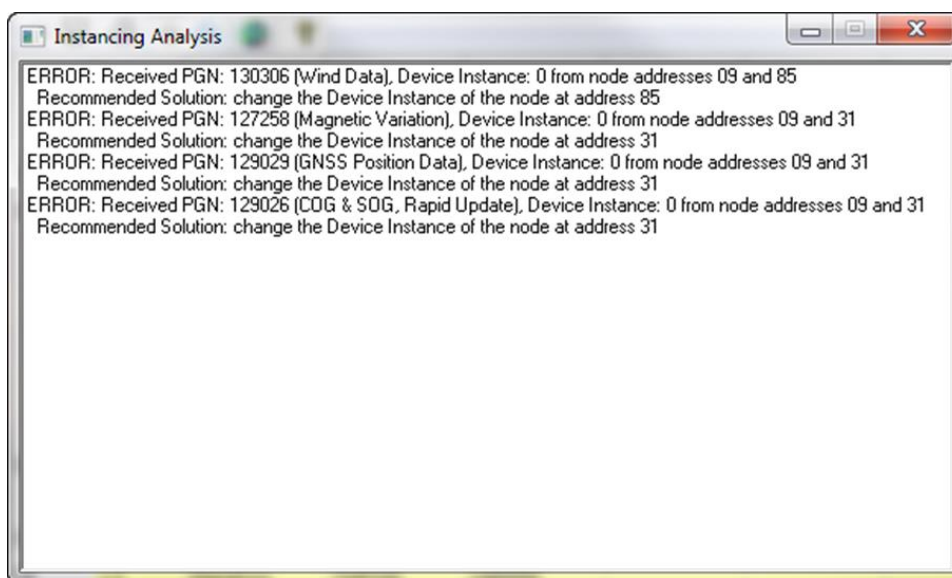


Figure 173 - Instancing Analysis Results Window

The analysis will complete after 30 seconds have elapsed. Once the analysis has completed, a dialog box will appear indicating whether any conflicts were detected. Click the “OK” button to close the dialog box (shown in Figure 174 below).

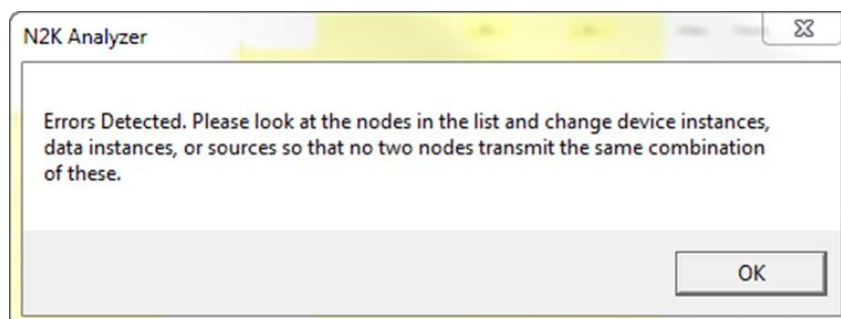


Figure 174 - Instancing Analysis Errors Detected Dialog

Once you have completed instancing analysis, resolve any undesired conflicts. To do this, click on each a line in the Instancing Analysis window to highlight the conflicting devices in red. Select one of the devices (which will change color to purple when selected), and perform the recommended actions, or change instance numbers and/or source types. Repeat this entire process until you do not have any unexpected conflicts.

6 Window Elements

File Setup Analyze Update Configure Web Help																											
																											
Expand	Node Address	Manufacturer	Mfg Model ID	Mfg Model Version	Mfg Serial Number	Source	Device Instance	Data Instance	Label	Current Software	Available Software	Installation Description #1	Installation Description #2														
	B3	Maretron	DCM100	2.0	1402401		2	3	Stbd Start	1.0.5.2	-	Stbd Start															
	C0	Maretron	ACM100	1.0	1381751		0	0	ACM100 #1	1.1.1.2	-	EXTERNAL POWE...	MARETRON														
	C2	Maretron	RAA100	1.0	1280068		0	0	Rudder	1.4.9	-		MARETRON														
	D1	Maretron	SIM100	1.0	1420889		2	5	SIM100	1.2.2.2	-		MARETRON														
	<table><tr><th>Channel</th><th>Label</th></tr><tr><td>1</td><td>Door Sensor</td></tr><tr><td>2</td><td>Bilge H/W</td></tr><tr><td>3</td><td>Motion</td></tr><tr><td>4</td><td>Smoke/Heat Detector</td></tr><tr><td>5</td><td>CO Detector</td></tr><tr><td>6</td><td>OFFLINE</td></tr></table>													Channel	Label	1	Door Sensor	2	Bilge H/W	3	Motion	4	Smoke/Heat Detector	5	CO Detector	6	OFFLINE
Channel	Label																										
1	Door Sensor																										
2	Bilge H/W																										
3	Motion																										
4	Smoke/Heat Detector																										
5	CO Detector																										
6	OFFLINE																										
	D2	Maretron	RIM100	1.0	1440089		1	10	RIM100	1.2.2.2	-		MARETRON														
	E7	Maretron	ALM100	1.0	1461783		0	0	LAB	1.0.6	-		MARETRON														
	52	Maretron	IPG100	1.0	1621171		1	1	Network Gateway	4.1.8.2	-	10.71.1.119	MARETRON														
	47	Maretron		D235-S1-TS-A-02/06	100982		1	1		3.005.3.0...	-																
	2R	Maretron	VDR100	1.0	1760760		0	0	Data Recorder	3.0.6.1	-	10.71.1.138	MARETRON														

Figure 175 - Window Elements

The following window elements are present in the N2KAnalyzer software:

- Menu
- Toolbar

- Device List Window
- Status Bar

6.1 Menus

6.1.1 File

Open...

The File→Open... menu item allows you to open a "boat file".

Save As...

Opens a window which allows you to choose the filename to which to save a "boat file". The "boat file" contains the current state of the network you are monitoring.

Print...

Prints the current contents of the Device List Window to a printer.

Connect to NMEA 2000 Network

Connects N2KAnalyzer to the NMEA 2000 network through the currently selected NMEA 2000 gateway, and queries the attached NMEA 2000 network for devices and fills the device list table with this information.

Disconnect from NMEA 2000 Network

Disconnects N2KAnalyzer from the NMEA 2000 gateway. All information that was previously available from the attached NMEA 2000 network which N2KAnalyzer was in online mode is still available.

Refresh

Refreshes the device list window by asking all devices on the NMEA 2000 network to transmit their information.

Exit

Changes from online mode to offline mode, if necessary, and exits N2KAnalyzer completely.

6.1.2 Setup

Software Update Directory...

This opens a dialog box allowing you to select the directory which contains the software image files to use when updating Maretron equipment on the attached NMEA 2000 network.

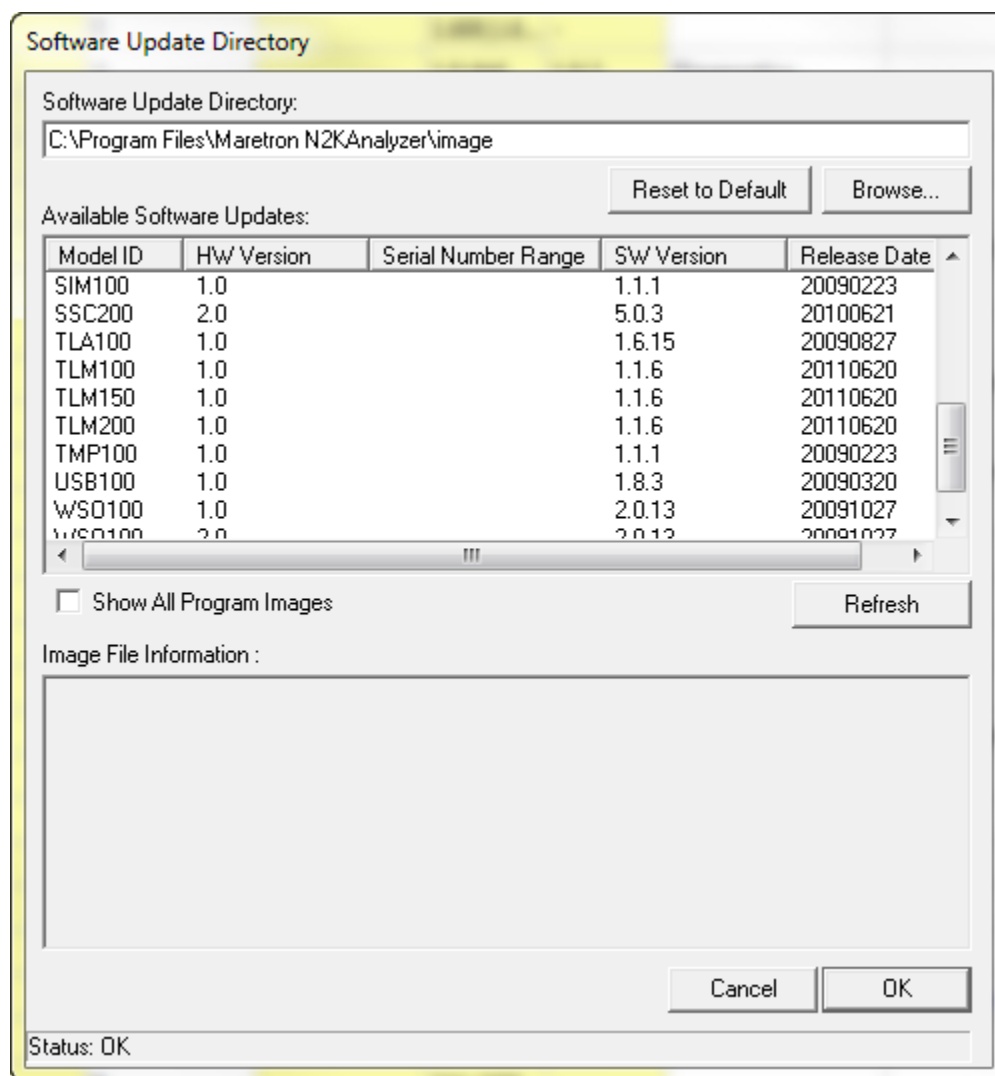


Figure 176 – Software Update Directory Configuration

Configure Gateway...

This opens a dialog window allowing you to select a specific NMEA 2000 gateway to connect to when entering online mode.

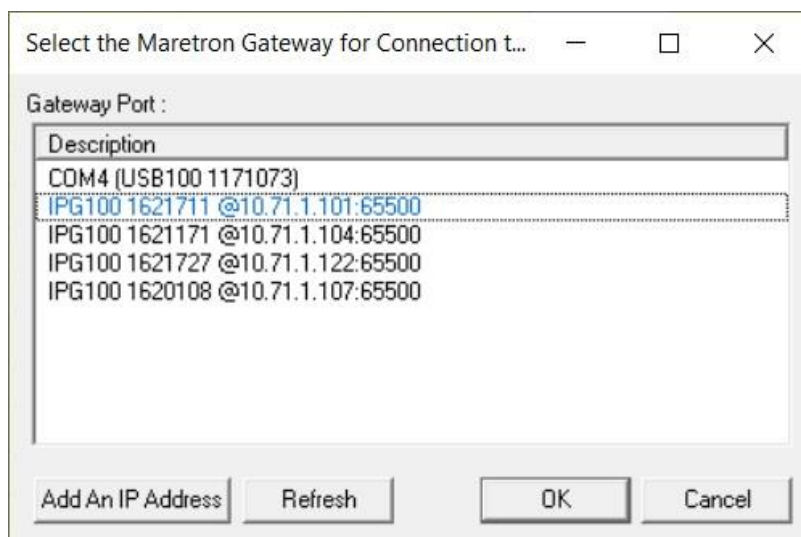


Figure 177 – Gateway Configuration Dialog

Units...

This opens a dialog window allowing you to choose from standard or metric units for the different data types displayed in the Transmitted PGN's windows.

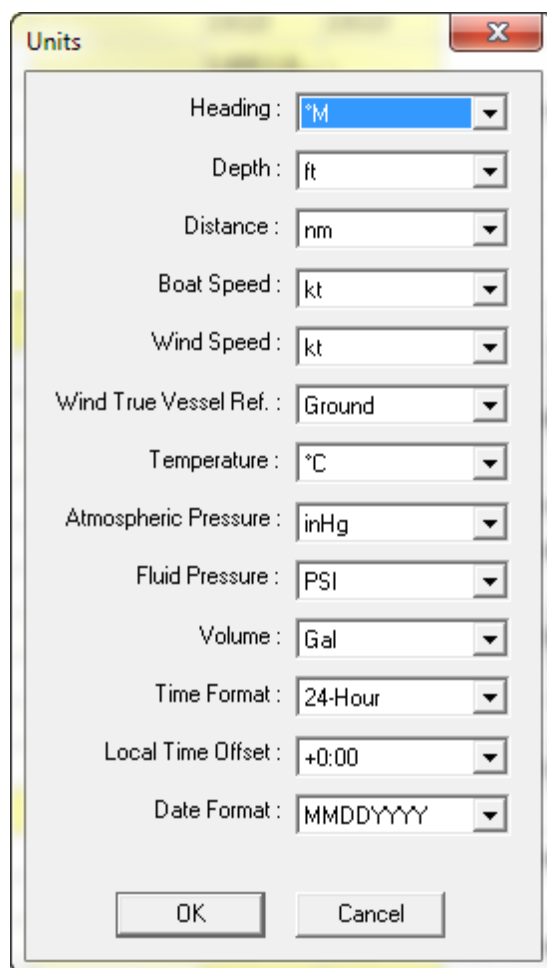


Figure 178 – Units Configuration Menu

Download Software Updates On Startup

If checked, this selection causes N2KAnalyzer to check for new versions of the program and device software every time it is started. If desired, you can disable this behavior by clicking on this selection to clear the checkmark. In either case, you can manually check for updates at any time by clicking on the *Web→Download Software Updates* menu selection.

Listen Only

If checked, this selection causes N2KAnalyzer to not transmit any requests for information, such as Address Claim or Product Information messages. The benefit of this mode is that N2KAnalyzer can be used to observe the network without having any effect on network operation.

Recover Device

It is possible, but extremely rare, for a device to get into a state in which it cannot be accessed by N2KAnalyzer in normal mode. An example of this is a device which is being programmed with new firmware, and the firmware update process is aborted or fails for some reason. Subsequently, when you need to re-program the device, you are asked for a part number. If you supply the wrong part number, the device will get flashed with firmware intended for

another device. The device will then appear unresponsive on the network. You can use the “Recover Device” menu option to place the device into a state in which you can program it with the correct firmware release.

Show Tips on Startup

If checked, this selection causes N2KAnalyzer to display a “tip of the day” when started.

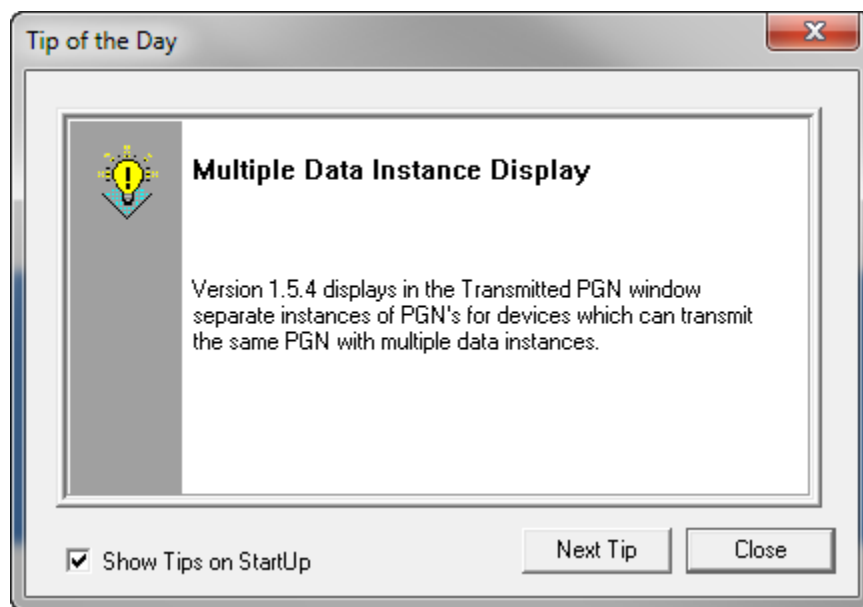


Figure 179 – Tip of the Day Dialog

Columns

The columns selection opens a submenu which lists all of the available columns that can be displayed in the device list window. The columns that are currently enabled for display are denoted by a checkmark. To enable or disable a column for display, click on it in this menu.

N2KAnalyzer® V3 User's Manual

Maretron N2KAnalyzer V3, Version 3.0.8.1 - VesselName

File Setup Analyze Update Configure Web Help

Software Update Directory...
Configure Gateway...
Units...
☒ Download Software Updates on Startup
Listen Only
Recover Device
Show Tips on Startup
☒ Save Device Config in Boatfiles
Edit Configuration File...
☒ Activate OctoPlex Configuration Support
Columns >

Serial Number	Device Instance	Current Software	Available Software	Installation Description #1	Installation Description #2	Mfg Information
	0	2.1.1.2	2.1.1.2			Maretron 1-866-550-9100 www.m
	51	1.07.00	-			
	36	1.0.3.0	1.0.3.0	Console	Main Cabin #1-32	Maretron 1-866-550-9100 www.m
	0	4.1.6.9	-			Maretron 1-866-550-9100 www.m
	50	2.01.00	-			

☒ Expand
☒ Node Address
☒ Manufacturer
☒ Mfg Model ID
☒ Mfg Model Version
☒ Mfg Serial Number
Source
☒ Device Instance
Data Instance
Label
☒ Current Software
☒ Available Software
☒ Installation Description #1
☒ Installation Description #2
☒ Mfg Information
Device Class
Device Function
System Instance
NMEA 2000 Version
NMEA 2000 Certification Level
Mfg Product Code
LEN
☒ Bandwidth

Connected to NMEA 2000 Network COM3

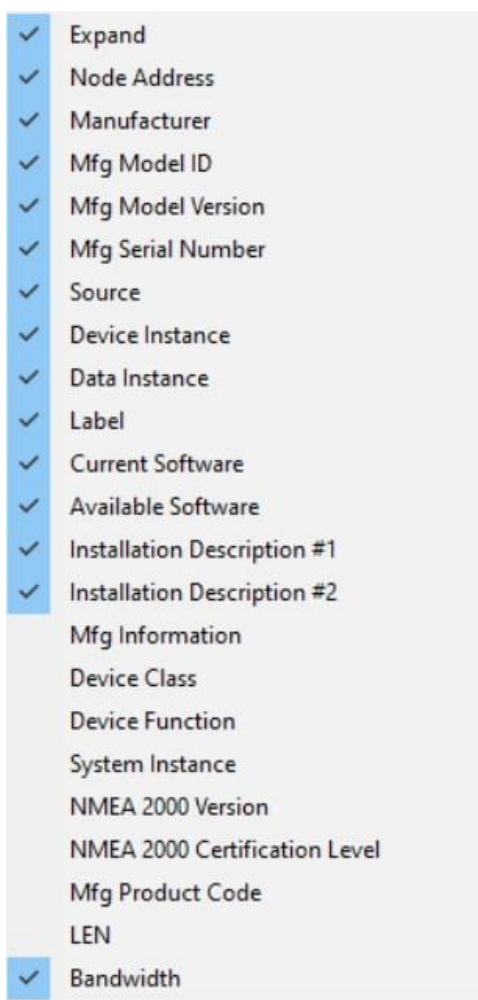


Figure 180 – Columns Selection Menu

6.1.3 Analyze

Received PGNs

This opens a window displaying the PGN's that the device reports as being able to receive, including a description of all the data fields.

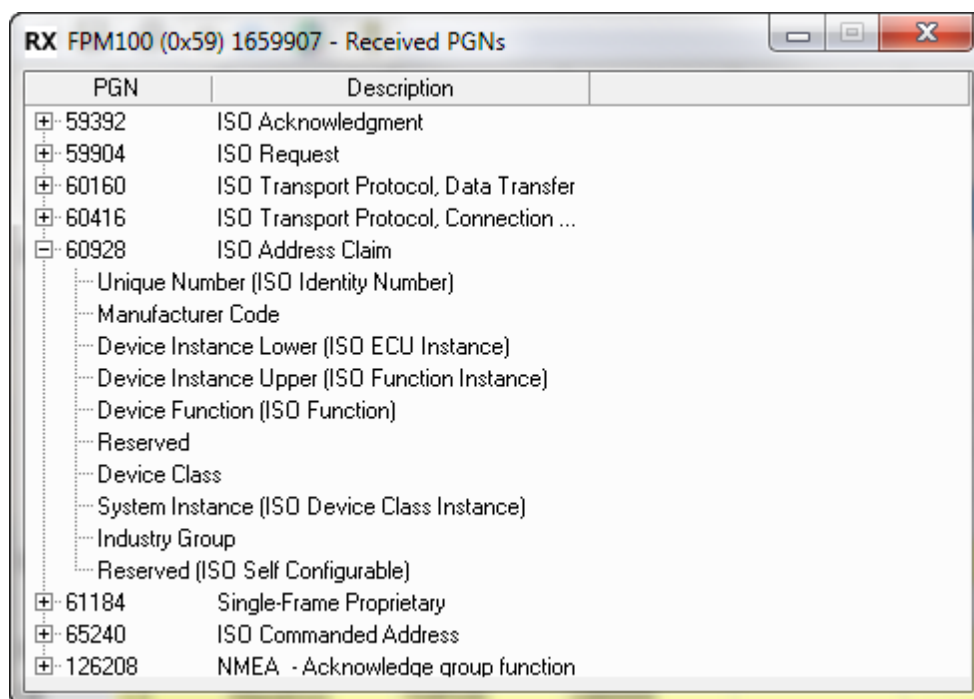


Figure 181 – Received PGNs Window

Transmitted PGNs

This opens a window displaying the transmitted PGN's from the selected device, including a timestamp and a description of all the data fields.

Click on the “+” sign at the left of each message type to expand details of the message.

You may see multiple entries of the same message type. These are different occurrences of the same message type which represent different, independent measurements. For example, a Maretron TMP100 Temperature Monitor has six independent channels transmitting six independent temperature readings, so the Transmitted PGNs window for a TMP100 will have up to six occurrences of the 130312 Temperature message, representing the measurements for each of the six channels.

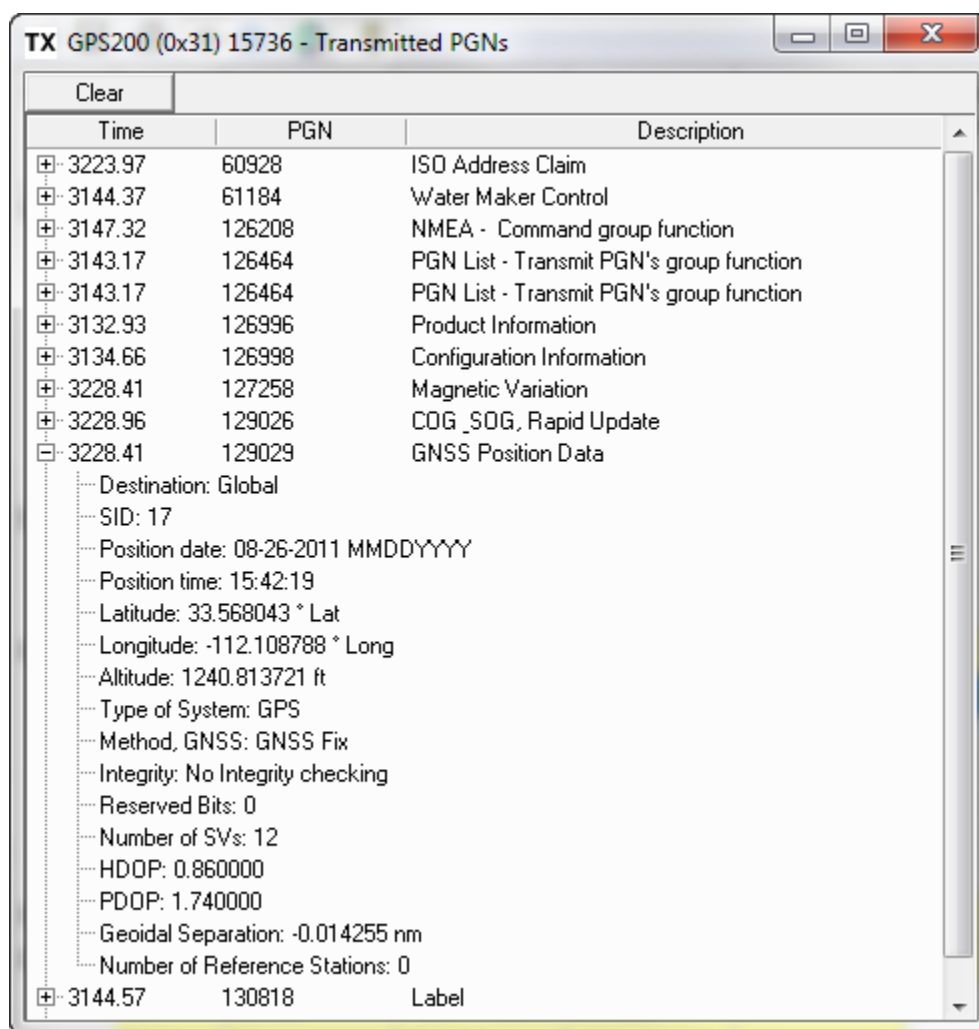


Figure 182 – Transmitted PGNs Window

At any time, you may press the “Clear” button to clear the list.

Device Properties

This opens a window displaying information on the selected device, including general properties, the installation description fields, and a list of PGN's that the device reports that it transmits and receives. Please refer to Section 'Viewing Device Properties' for details.

Instancing

This causes N2KAnalyzer to scan the network information and traffic, searching for conflicting instancing information that may cause displays to report incorrect information. It will open a window that will display conflicts and recommendations for resolving the conflicts. Please refer to segment 5.38.2 'Analyzing NMEA 2000 Instancing' for further detail.

DSM250 Viewing...

This opens a window containing an emulation of the Maretron DSM250 Multi-function display, which allows you to view a wide variety of data on the attached NMEA 2000 network.

EEPROM Contents...

This allows you to write the EEPROM contents from a supported Maretron device to a HEX file on your hard disk. Maretron technical support may request you generate this file and e-mail it to them in certain situations.

6.1.4 Update

Selected Device's Software...

This will update the software on the device that has been highlighted in the device list window to the most recent version. This menu item is available only in online mode. Please refer to Section 4.5 for details.

6.1.5 Configure

Installation Descriptions

This will enable you to change the installation descriptions fields of the selected device, provided that the device supports field modification of these fields. You can fill these fields with any desired data; for example, the location of the device, date installed, date calibrated, etc.

Device Instance

This will enable you to change the upper device instance and lower device instance fields of the device, provided that the device supports modification of these fields over the network (some devices provide instead the ability to modify these fields by DIP switches or rotary switches on the devices themselves; please consult the device's user manual for details).

DSM250 Configuration...

This opens a window containing an emulation of the Maretron DSM250 Multi-function display in configuration mode, which allows you to configure any Maretron devices on the attached NMEA 2000 network. Please refer to the *DSM250 User's Manual* for detailed instructions on configuration of NMEA 2000 devices. This menu item is available only in online mode.

Restore Factory Defaults

This will return the currently selected device to the condition it was in when it was shipped from the factory with the exception that the device will retain its current node address.

6.1.6 Web

Download Software Updates

Connects to the Maretron website and checks whether a newer version of N2KAnalyzer software or updates to device software are available. If newer software is available, N2KAnalyzer will prompt you to download and install the new version.

Maretron Website

Opens your default web browser and directs it to the Maretron home page, where you can find information about Maretron products and solutions. - www.maretron.com

Knowledge Base

Opens your default web browser and directs it to Maretron's support knowledge base, where you can find answers to questions about the installation, configuration, and use of Maretron products. - <https://www.maretron.com/support/knowledgebase/phpkbv7/index.php>

Remote Support

Downloads the latest remote access tool to partner with a Maretron Technician for assistance (TeamViewer)

IPG100 Recovery Instructions

This provides instructions and latest files for manually restoring the IPG100 network gateway

VDR100 Recovery Instructions

This provides instructions and latest files for manually restoring the VDR100 data recorder

6.1.7 Help

User's Manual

Opens PDF copy stored within local program files

Support Tools

Advanced toolset that is enabled by your Maretron technician for higher level troubleshooting services

About

Illustrates current version that is running and the source location of the configuration file.

6.1.8 About N2KAnalyzer

Displays a dialog box with information about N2KAnalyzer, including the current version number and copyright information.

6.2 Toolbar



Figure 183 – Toolbars

The following icons appear on the toolbar, in order from left to right:

Open: Opens an existing boat file.

Save: Saves a copy of the currently connected NMEA2000 network device's configuration to a boat file.

Print: Prints the contents of the Device List Window.

Connect / Disconnect: Connects N2KAnalyzer to a NMEA 2000 network if it is currently disconnected from the network, and vice versa.

Refresh: Refreshes the Device List window.

DSM Emulator: This toggles the visibility of the window of the DSM250 Virtual Emulator

Download Software Updates: Forces the application to check if a new version of N2KAnalyzer is available to download

About: Displays the About window containing info about the current software version that is running and the source location of the configuration file.

6.3 Device List Window

The device list window shows information on all devices currently connected to the NMEA 2000 network. The N2KAnalyzer software broadcasts a request to all nodes on the NMEA 2000 network, which in turn broadcast their identifying information. It then fills the device list window with information as it is received from the other devices on the network. This process repeats every ten seconds, and the device list window contents are updated accordingly.

The text for each device is normally displayed in black. Different colors are used to signify different characteristics of devices:

Blue – identifies the gateway that is being used by the N2KAnalyzer software

Red – identifies that a new revision of firmware is available for that device.

Grey – device is not responding or has been removed from the network.

Some parameters of devices, including the Data Instance, Label, Installation Description #1 and Installation #2, can be edited directly in the device list window, just as you might do with a spreadsheet program. The device parameters that you can change have a white background, as opposed to device parameters that are not user-changeable, which have a yellow background.

File Setup Analyze Update Configure Web Help																											
 																											
Expand	Node Address	Manufacturer	Mfg Model ID	Mfg Model Version	Mfg Serial Number	Source	Device Instance	Data Instance	Label	Current Software	Available Software	Installation Description #1	Installation Description #2														
	B3	Maretron	DCM100	2.0	1402401		2	3	Stbd Start	1.0.5.2	-	Stbd Start															
	C0	Maretron	ACM100	1.0	1381751		0	0	ACM100 #1	1.1.1.2	-	EXTERNAL POWE...	MARETRON														
	C2	Maretron	RAA100	1.0	1280068		0	0	Rudder	1.4.9	-		MARETRON														
	D1	Maretron	SIM100	1.0	1420889		2	5	SIM100	1.2.2.2	-		MARETRON														
	<table><tr><th>Channel</th><th>Label</th></tr><tr><td>1</td><td>Door Sensor</td></tr><tr><td>2</td><td>Bilge H/W</td></tr><tr><td>3</td><td>Motion</td></tr><tr><td>4</td><td>Smoke/Heat Detector</td></tr><tr><td>5</td><td>CO Detector</td></tr><tr><td>6</td><td>OFFLINE</td></tr></table>													Channel	Label	1	Door Sensor	2	Bilge H/W	3	Motion	4	Smoke/Heat Detector	5	CO Detector	6	OFFLINE
Channel	Label																										
1	Door Sensor																										
2	Bilge H/W																										
3	Motion																										
4	Smoke/Heat Detector																										
5	CO Detector																										
6	OFFLINE																										
	D2	Maretron	RIM100	1.0	1440089		1	10	RIM100	1.2.2.2	-		MARETRON														
	E7	Maretron	ALM100	1.0	1461783		0	0	LAB	1.0.6	-		MARETRON														
	52	Maretron	IPG100	1.0	1621171		1	1	Network Gateway	4.1.8.2	-	10.71.1.119	MARETRON														
	47	Maretron		D235-S1-TS-A-02/06	100982		1	1		3.005,3.0...	-																
	28	Maretron	VDR100	1.0	1760760		0	0	Data Recorder	3.0.6.1	-	10.71.1.138	MARETRON														

Figure 184 – Device List Window

6.3.1 Expand

Some NMEA 2000 devices can transmit more than one distinct parameter (this is referred to as having multiple hardware channels). If a particular device can display more than one parameter, a “+” sign appears in the “Expand” column of the screen. You can click on this “+” sign, and the single device row will expand to add a row for each hardware channel in the device.

6.3.2 Node Address

Each device on an NMEA 2000 network claims a node address between the value of 0 (0x0 hexadecimal) and 251 (0xFB hexadecimal). These node addresses may change as new devices are added to the network. This column shows the node addresses claimed by each device on the network.

6.3.3 Manufacturer

This column shows the manufacturer reported by each device. The manufacturer’s names are read from a table in the N2KAnalyzer software which translates the manufacturer’s code reported by the device. If a new NMEA 2000 manufacturer has been added since the N2KAnalyzer software was released, this will show up as a numeric value. If this happens, please either

Update your N2KAnalyzer software by selecting *Web → Download Firmware Updates* menu item, or

Check the NMEA website for the current list of manufacturer codes.

6.3.4 Mfg Model ID

This column shows the model ID (sometimes known as Device Model, Model Number, or Model Name) reported by each device.

6.3.5 Mfg Model Version

This column shows the hardware version number reported by each device.

6.3.6 Mfg Serial Number

This column shows the serial number reported by each device.

6.3.7 Source

This column shows the source type for the device, if the device has a single hardware channel and a source type. Currently, Maretron TLA (Tank Level Adapter) and TLM (Tank Level Monitor) devices fall into this category.

6.3.8 Device Instance

This column shows the Device Instance for the device. The Device Instance is the instance number that is used to identify the device in NMEA 2000 Device Instance Identification, N2KView or on a DSM series display.

6.3.9 Data Instance

This column shows the Data Instance for the device's broadcasted data output. The Data Instance is the instance number that is used to identify the device's unique data broadcast on the NMEA 2000 network. For devices with multi-channel solutions this value will differ from the Device Instance.

6.3.10 Label

This column shows the User-Configurable Label for the device.

6.3.11 Current Software

This column shows the software version number reported by each device.

6.3.12 Available Software

This column shows the most recent version of software that is available for each device that can be updated by the N2KAnalyzer software. This number will be highlighted in red if it is newer than the version of the firmware currently installed on the device. If this number is lower than the version number shown in the *Current Software* column, then please download a more recent copy of N2KAnalyzer from <http://www.maretron.com/downloads>.

6.3.13 Installation Description #1

This column shows the "Install Description #1" field of the Product Information message, which is user-programmable in some devices and may be used by a user to describe various information; for example, the location of the equipment.

6.3.14 Installation Description #2

This column shows the “Install Description #2” field of the Product Information message, which is user-programmable in some devices and may be used by a user to describe various information; for example, the location of the equipment.

6.3.15 Mfg Information

This column shows the Manufacturer’s Information field of the Product Information, which is programmed by a device manufacturer to describe various information; for example, contact information for the manufacturer.

6.3.16 Device Class

This column shows the NMEA 2000 device class as reported by each device.

6.3.17 Device Function

This column shows the NMEA 2000 device function (this is a more-specific indication of the device function within the context of the device class) reported by each device.

6.3.18 System Instance

This column shows the NMEA 2000 system instance reported by each device.

6.3.19 NMEA 2000 Version

This column indicates the version of the NMEA 2000 standard to which the device was designed.

6.3.20 NMEA 2000 Certification Level

This column indicates the level of network functionality implemented by the device. Current values include “A”, which indicates full functionality, and “B”, which indicates reduced functionality. Recently, certification levels have been eliminated from the standard, so this field will be blank for newer devices.

6.3.21 MFG Product Code

This column indicates the numeric product code assigned to the device by NMEA.

6.3.22 LEN

This column indicates the Load Equivalent Number reported by the device. Each LEN indicates 50mA current consumed by the device. For example, a device with LEN equal to 3 will consume a maximum of 150mA current. This information is required for network cabling and power supply planning.

6.3.23 Bandwidth

This column indicates the percentage of NMEA 2000 bandwidth that is consumed by messages transmitted by this device. The header for this column indicates the total percentage of NMEA 2000 bandwidth that consumed by all devices on the network.

6.4 Device Channel Information

If a device supports multiple hardware channels, clicking on the “+” symbol in the “Expand” column will open another grid showing information for the hardware channels. This window will contain different information depending on the device. Following is a list of columns that are supported:

6.4.1 Hardware Channel

This column identifies which hardware channel the information in that row is for. For some types of devices, this column will contain a number corresponding to the number of the hardware channel the information is for. For other devices, this column may contain a text string describing the function of the channel.

6.4.2 Indicator

For RIM and SIM devices, this column contains the number of the indicator the information in that row is for.

6.4.3 Source

For hardware channels which indicate a source type, this column contains the name of the source type currently selected for that channel.

6.4.4 Instance

For channels which indicate a numeric instance, this column contains the number of the data instance currently selected for that channel.

6.4.5 Label

This column contains the text label which is assigned to that channel. This label will appear in N2KView and DSM series displays when you are selecting parameters to display in a component or on a favorite screen.

6.5 Status Bar

The status bar at the bottom of the main program window displays information about the current operating mode of the N2KAnalyzer software.

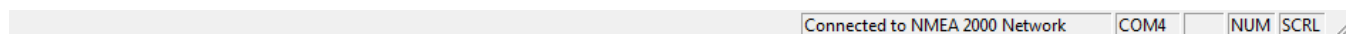


Figure 185 – Status Bar

6.5.1 Status Message Area

This area displays the current status of the N2KAnalyzer software, as well as help for toolbar buttons over which the mouse cursor is located.

6.5.2 Connection Status Indicator

This area displays “Connected to NMEA 2000 Network” if the N2KAnalyzer software is currently connected to a NMEA 2000 network through a gateway, and “Disconnected from NMEA 2000 Network” at all other times.

6.5.3 Gateway Selection Indicator

If the N2KAnalyzer software is operating in online mode, then this area of the status bar will display the name of the gateway (COM port or IP address) being used to connect to the NMEA 2000 gateway.

6.5.4 Caps Lock Indicator

This area of the status bar displays “CAP” if caps lock is active on the keyboard and is blank otherwise.

6.5.5 Num Lock Indicator

This area of the status bar displays “NUM” if num lock is active on the keyboard and is blank otherwise.

6.5.6 Scroll Lock Indicator

This area of the status bar displays “SCRL” if scroll lock is active on the keyboard and is blank otherwise.

7 Troubleshooting

SYMPTOM: When trying to enter online mode, you see a dialog box with the message ‘Failure to connect to NMEA 2000 Gateway on port “COMx”’.

This message indicates that the N2KAnalyzer software was unable to establish a connection to the NMEA 2000 network through the NMEA 2000 gateway on the indicated serial port. Following are some steps you can take to resolve the problem.

- Select the *Setup→Configure Gateway...* menu item to select a valid NMEA 2000 gateway.
- Check that the NMEA 2000 gateway is connected to a powered NMEA 2000 network and is receiving power through the NMEA 2000 network connection.
- Check that the NMEA 2000 gateway is connected to the computer and that the connecting cable is good. Try reconnecting the NMEA 2000 gateway to the computer with a different cable.
- Check the security of all NMEA 2000 network connections.
- Try disconnecting and reconnecting the cable between the computer and the NMEA 2000 gateway.
- Reboot the computer.

SYMPTOM: You see only the NMEA 2000 Gateway in the device list window. This means that the NMEA 2000 Gateway is properly connected to the computer but is unable to communicate with other NMEA 2000 devices. Following are some steps you can take to resolve the problem,

- Ensure that the proper drivers are installed for the NMEA 2000 gateway.
- Check that the NMEA 2000 network has two termination resistors installed.
- Check the security of all NMEA 2000 network connections. Ensure that at least one other device is connected to the NMEA 2000 network.

8 Technical Support

If you require technical support for Maretron products, you can reach us in any of the following ways:

Telephone: 1-866-550-9100
Fax: 1-602-861-1777
E-mail: support@maretron.com
World Wide Web: <http://www.maretron.com>
Mail: Carling Technologies, Marine Division
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