OPTICAN CONFIGURATION TOOL PROFESSIONAL

USER'S MANUAL

Divelbiss CORPORATION

RELEASE V1.00
For Software Version 1.0.0.0

TABLE OF CONTENTS

This section lists all the sections, and topics included in this manual including page number references.

CHAPTER 1
GETTING STARTED

How to Use this Manual

In this manual, the following conventions are used to distinguish elements of text:

BOLD	Denotes labeling, commands, and literal portions of syntax that must appear exactly as shown.
italic	Used for variables and placeholders that represent the type of text to be entered by the user.
SMALL CAPS	Used to show key sequences or actual buttons, such as OK, where the user clicks the OK button.

In addition, the following symbols appear periodically appear in the left margin to call the readers attention to specific details in the text:

Warns the reader of a potential danger or hazard that is associated with certain actions.

Appears when the text contains a tip that is especially helpful.

Indicates that the text contains information to which the reader should pay particularly close attention.

OptiCAN Information

Please refer to the EZ LADDER User's Manual for details on network planning, hardware requirements, how to use OptiCAN network registers, configure nodes and other operational information regarding OptiCAN. This manual is intended to provide information on the OptiCAN Configuration Tool Professional only.

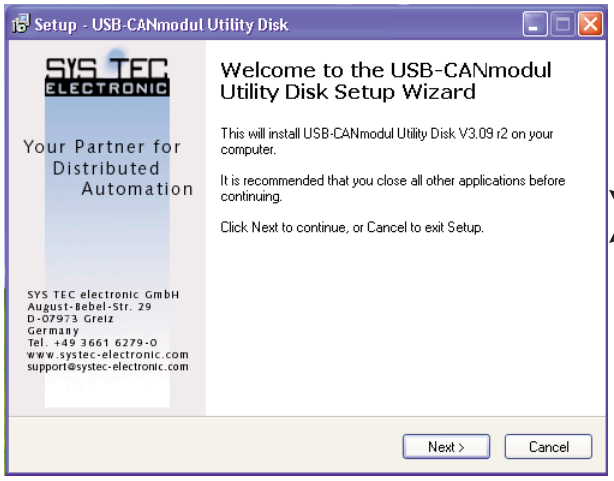
What's Included

The OptiCAN Configuration Tool Professional includes the OptiCAN Configuration Tool Professional Software on CD, the USB to CAN Converter Module, the OptiCAN Network Interface Cable and the Converter Module drivers on CD.

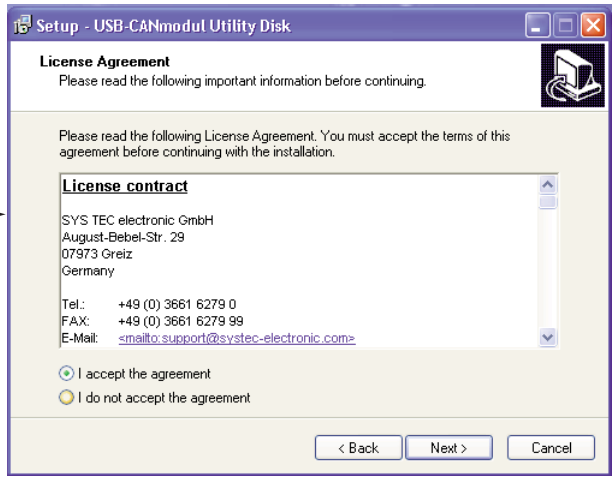
Installing the USB to CAN Drivers

Before the USB to CAN Module can be used, its drivers must be installed. Insert the CD into the CD drive. The menu should automatically appear. If no menu appears, browse to the drive and run the *setup.exe* file. Follow the on-screen instructions per the items below.

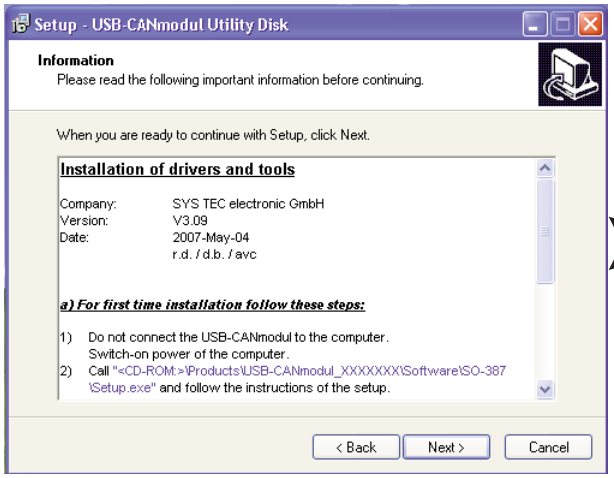
This drivers must be loaded **BEFORE** connecting the USB-CAN Interface.



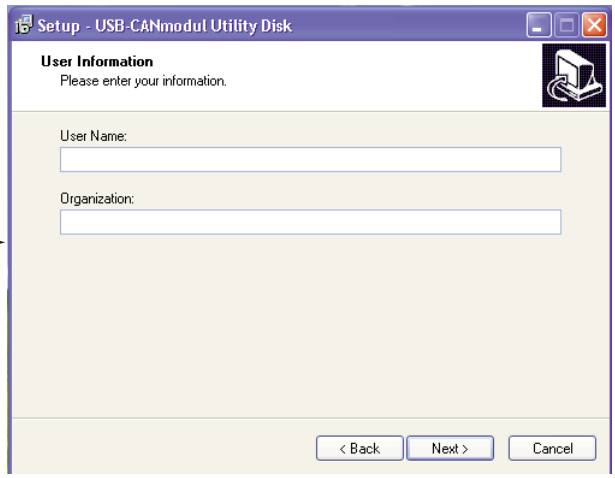
Click **NEXT**.



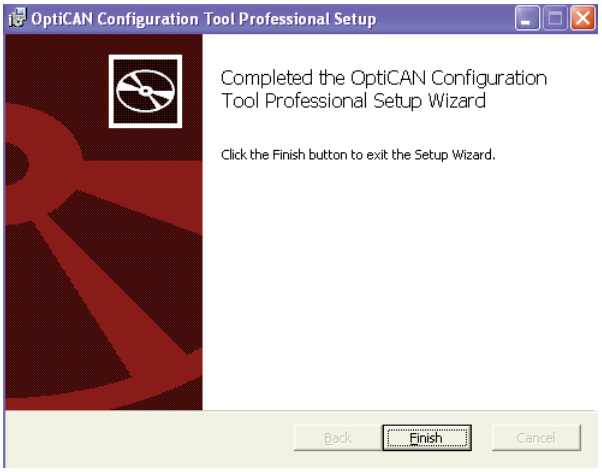
Accept the agreement. Click **NEXT**.



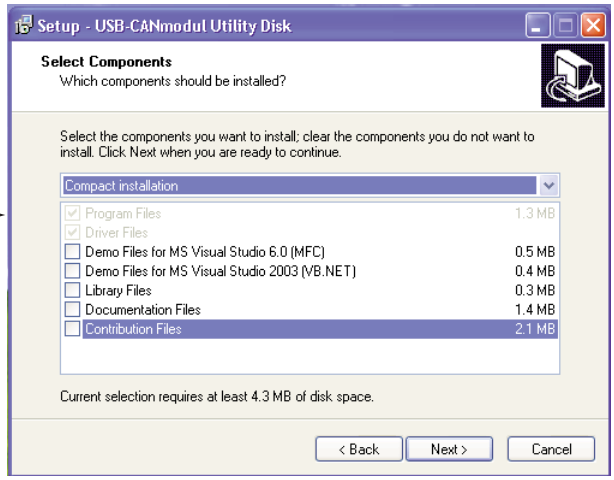
Click **NEXT**.



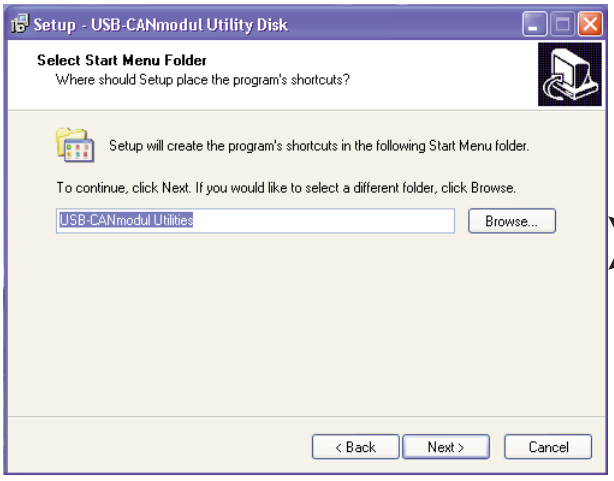
Enter Username / Organization. Click **NEXT**.



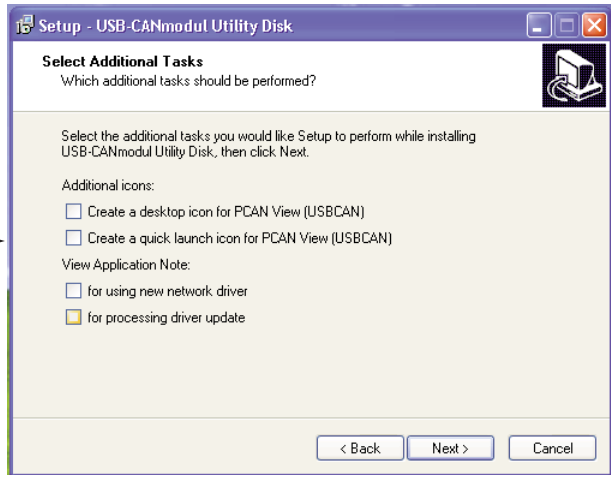
Click **NEXT**.



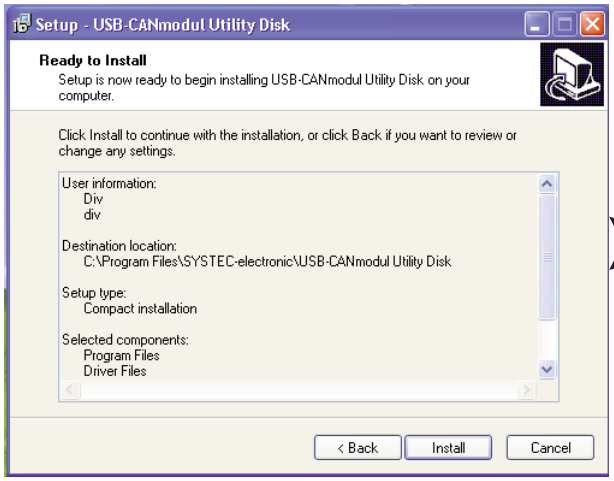
Select Compact Installation. Click **NEXT**.



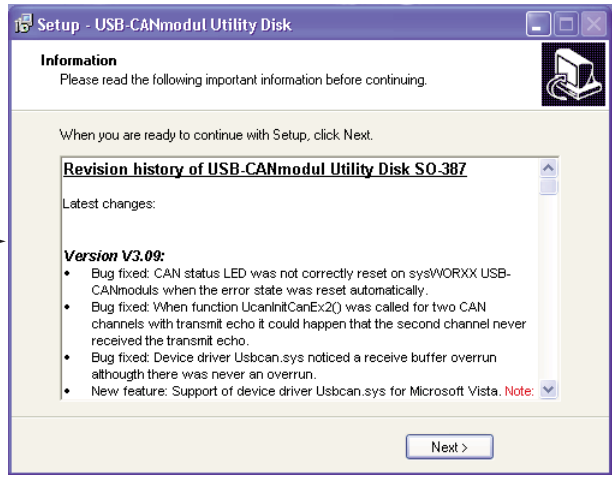
Click **NEXT**.



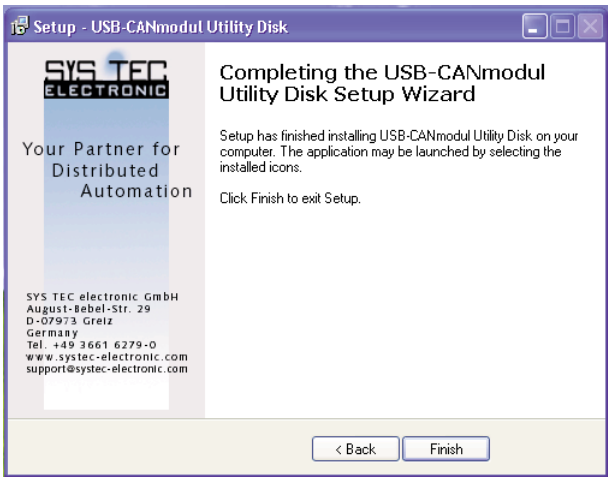
Uncheck all items. Click **NEXT**.



Click **NEXT**.



Click **NEXT**.



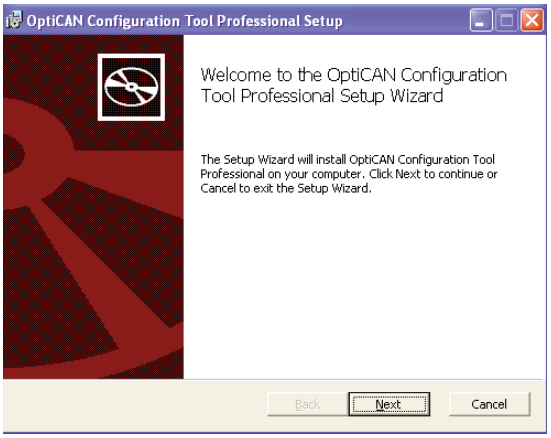
Click **FINISH**. Drivers are now loaded.

Installing the OptiCAN Configuration Tool Professional

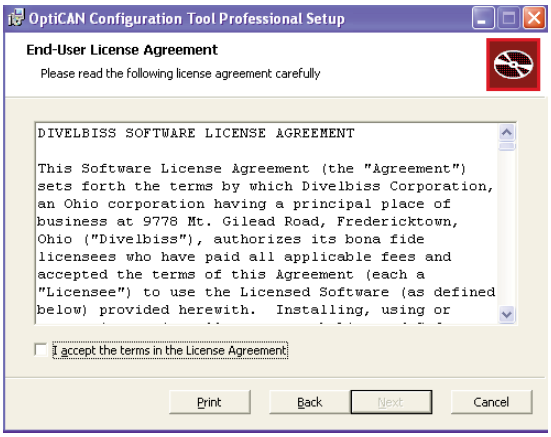
1. Insert the OptiCAN Configuration Tool Professional CD into your CD Drive. A Menu should automatically appear. If no Menu automatically starts, Open your web browser and open the **start.html** page on the CD.

2. From the menu, select **Install OptiCAN Configuration Tool Professional Software**. Follow the on-screen prompts as shown.

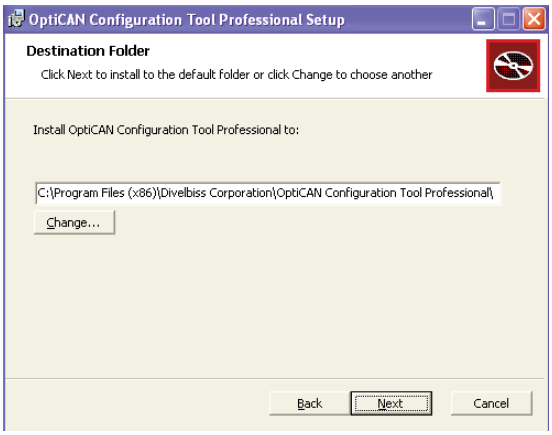
3. Click **NEXT**.



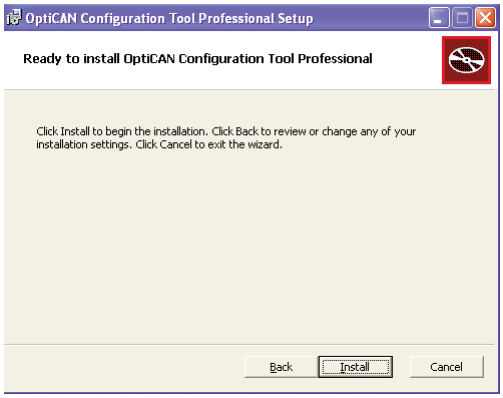
4. Read and check the box that you have read and agree to the End User License Agreement.



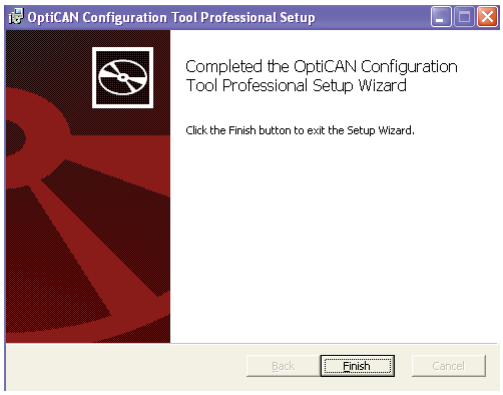
5. Use the default install location or select a new location. Click **NEXT**.



6. Click **NEXT** to install the software.



7. Click finish to complete the software installation. The OptiCAN Configuration Tool Professional is now ready to use.

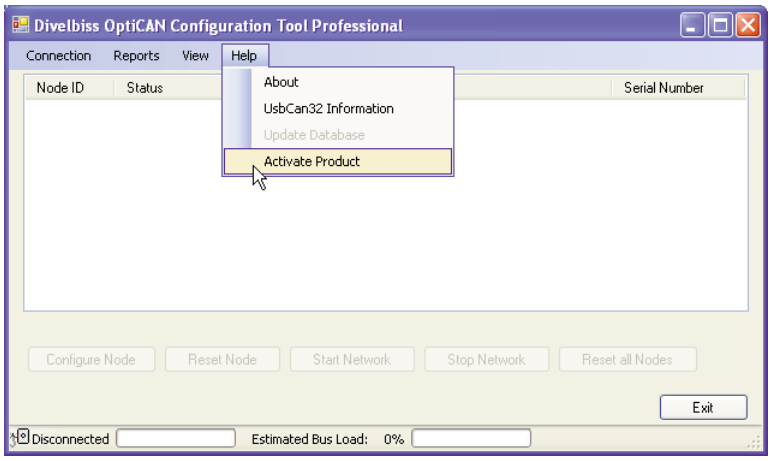


Activating / Registering the OptiCAN Configuration Tool Professional Software

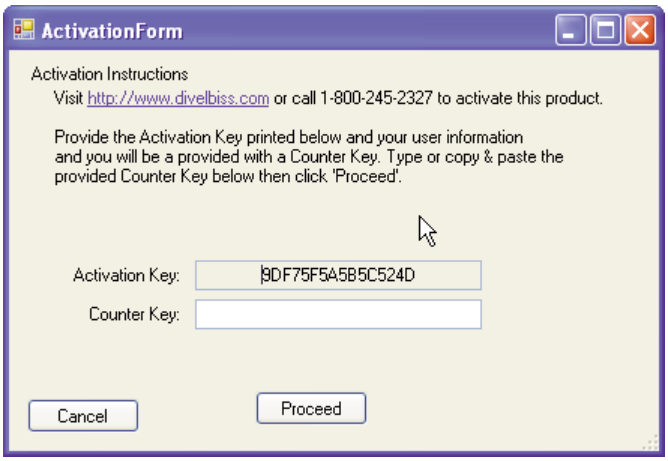
Before it can be used, you must activate / Register the OptiCAN Configuration Tool Professional Software. Please see the following steps to activate your licensed copy.

1. Start the OptiCAN Configuration Tool Professional program by clicking *START...PROGRAMS...DIVELBISS CORPORATION....OPTICAN CONFIGURATION TOOL PROFESSIONAL*. The program will start.

2. Click *HELP....ACTIVATE PRODUCT* as shown to open an activation window.



3. The ActivationForm Window will open as shown.



4. Click the link provided or open your internet browser to:

   http://www.divelbiss.com/products/software/optican/activate.aspx

5. Complete the FORM shown. Complete all fields and copy/paste the Activation Key and submit to get the Counter Key.

6. Paste the Counter Key into the ActivationForm Window and click **PROCEED**. This will activate the software.

SECTION 2
OPTICAN CONFIGURATION TOOL PRO

What is OptiCAN

OptiCAN is a Divelbiss proprietary CAN (Controller Area Network) that provides a commuication link between Divelbiss OptiCAN enabled controllers and other OptiCAN enabled devices such as I/O modules and controllers. The Divelbiss OptiCAN network supports up to 64 nodes (devices) and is register based. Each node supports up to 256 registers and communication can be triggered based on time or on an event.

What is the OptiCAN Configuration Tool Professional

For networks 10 nodes or less, the EZ LADDER built-in 'OptiCAN Configuration Tool'. For networks greater than 10 nodes or if additional features are required, the OptiCAN Configuration Tool Professional is required.

The OptiCAN Configuration Tool Professional is a bundle pack that includes the OptiCAN Configuration Tool Professional Software on CD, the USB to CAN Converter Module, the OptiCAN Network Interface Cable and the Converter Module drivers on CD.

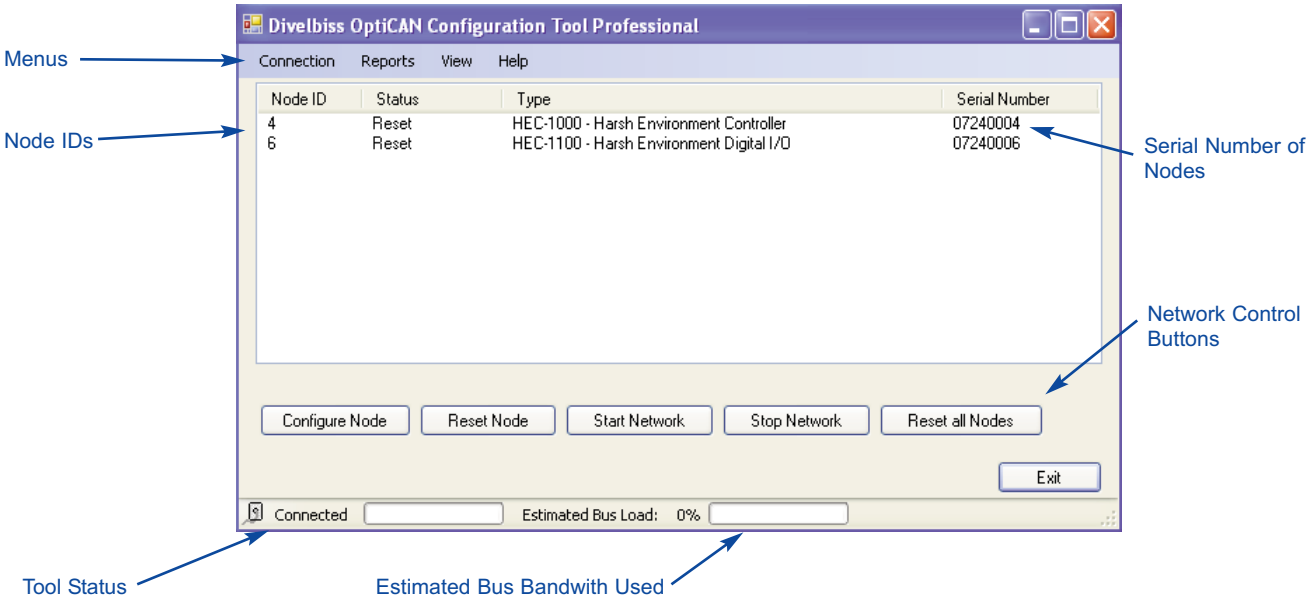
The Divelbiss OptiCAN Configuration Tool Professional can perform the following major functions:

1. View CAN messages in real time.
2. Log data to a file.
3. Start / Stop / Reset the OptiCAN Network
4. Allow the user to configure devices utilizing the CAN protocol (non-controller)
5. Save / Print Node Lists.

Main Screen - OptiCAN Configuration Tool Professional

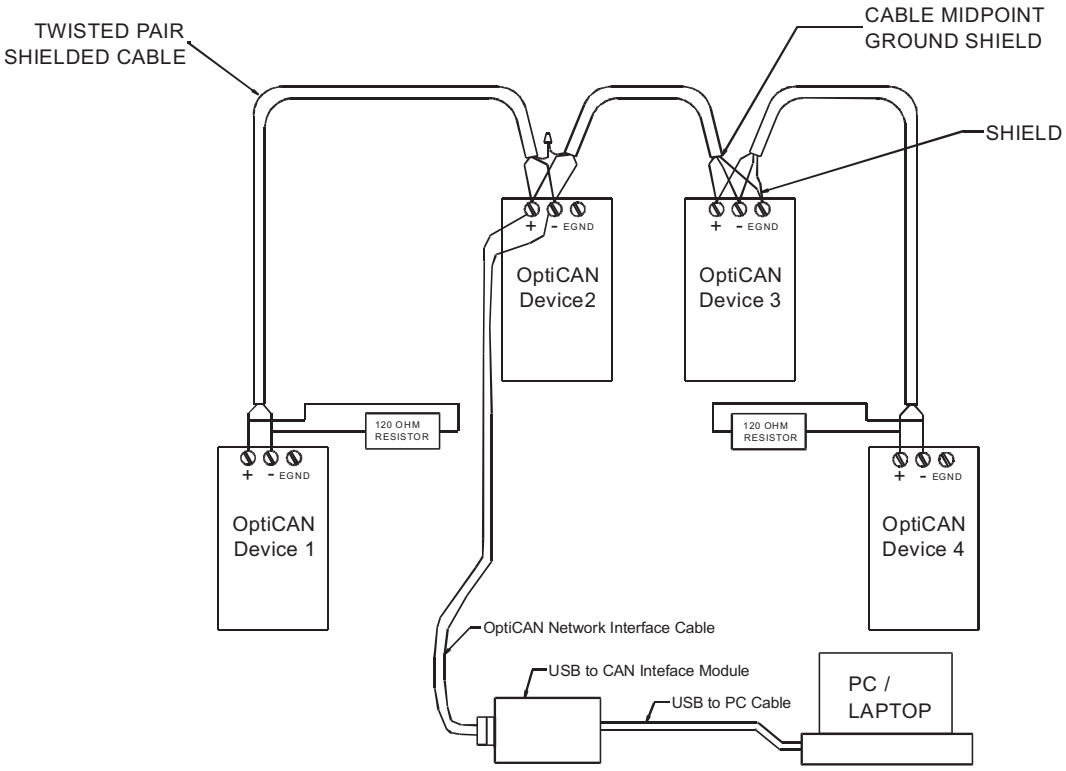
To start the OptiCAN Configuration Tool Professional (software), use the START menu. Click *START...DIVELBISS CORPORATION...OPTICAN CONFIGURATION TOOL PRO*.

The application will start and display the main screen as shown.

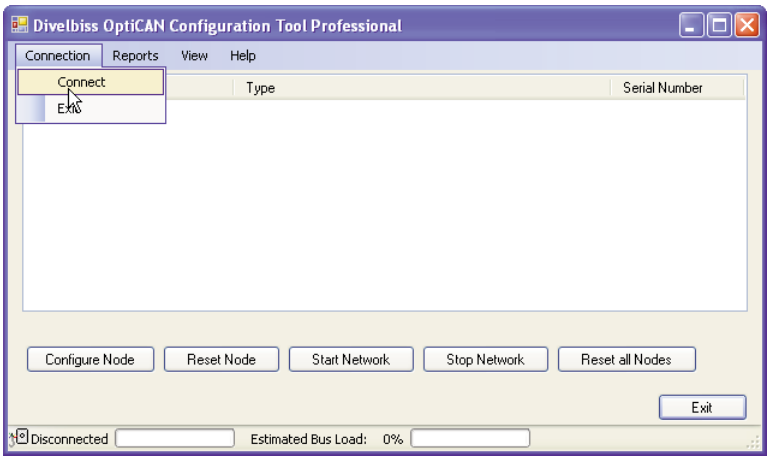


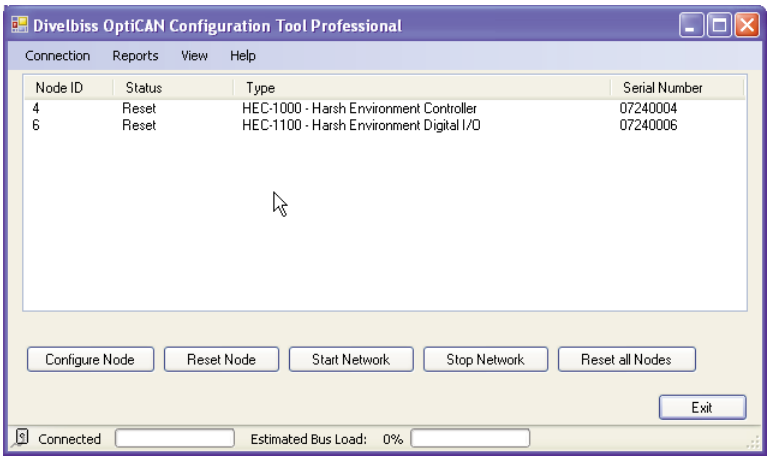
Connecting to the OptiCAN Network

Before the OptiCAN Configuration Tool Professional can be used to monitor and make changes to network nodes, it must first be connected to the OptiCAN Network. Connect the USB to CAN Converter Module as shown.



If not already started, please start the OptiCAN Configuration Tool Professional software. Click **CONNECTION** and then **CONNECT**. If the module is connected correctly and the software and drivers are loaded, the OptiCAN Configuration Tool will connect to the OptiCAN Network. The status in the lower left hand corner will change to 'Connected' and the network nodes will be visible.





Now that you are connected, you can monitor and configure nodes and send commands to network nodes.

Network Control Buttons

The Network Control Buttons allow send immediate direct commands to all appropriate nodes on the OptiCAN Network.

Configure Node

This button will open the Node Configuration Window of the actual node that is selected in the main screen. For non-controller nodes, registers, broadcast rates and more may be configured. For controller nodes, this information may only be viewed.

Reset Node

This button will cause the selected node to be put in 'reset' mode.

Start Network

This button will send the 'Start Network' command to all nodes. This starts network communication between nodes. A start command must be sent before any network communication can occur (this can be done from a controller on the network in the ladder diagram or by using this tool)

Stop Network

This button will send the 'Stop Network' command to all nodes. This halts network communication between nodes and puts all nodes in the 'reset' mode.

Reset all Nodes

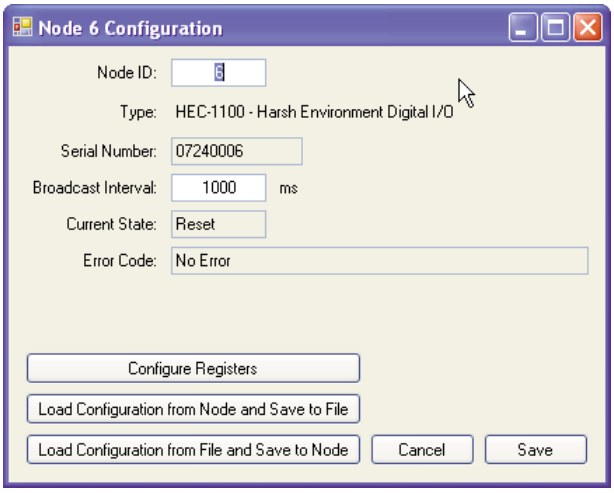
This button will send will cause all nodes to be in the 'reset' mode.

Configuring Nodes

The OptiCAN Configuration Tool Professional allows for configuring OptiCAN Network non-controller node devices for network communications. Only non-controllers may be configured using the OptiCAN Configuration Tool Professional.

When configuring a non-controller device for the first time, the device will display with a Node ID of 255. The '255' designation is reserved for devices that have not been configured. For multiple new devices, they will all be assigned the same '255' Node ID. The controller can differentiate between devices that have not been configured using the Serial Number. The serial number is programmed at the factory and cannot change.

The following image shows the Node Configuration Window.



Node ID

This is the actual network node ID. This value may be changed to any number from 1 to 255; however, 255 must only be reserved for new nodes that have not been configured. By changing the node ID, any ladder program that was 'communicating' with this node must also be updated.

Type

This field gives a brief description of the actual hardware located at this node ID.

Serial Number

This is the actual serial number pre-programmed in the hardware node. This serial number is factory set and cannot be changed.

Broadcast Interval

This is the interval at which this node will transmit registers that are configured to program at a set interval.

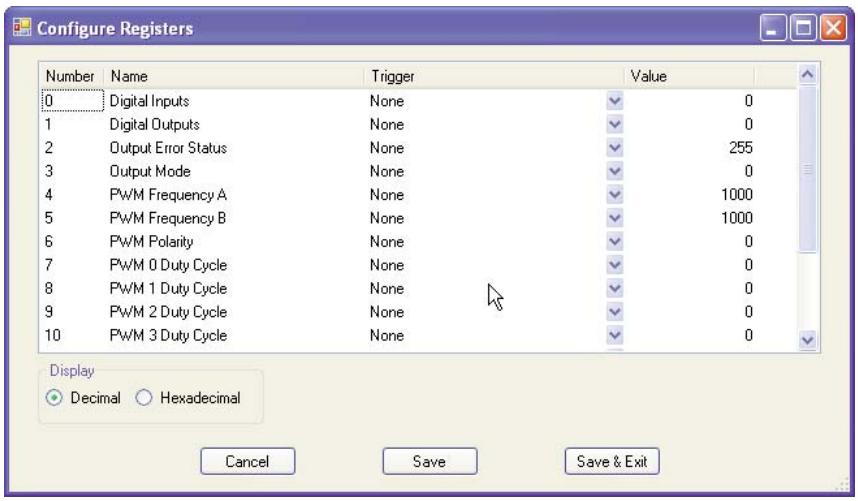
Current State

The current state of the node. Reset, Active, Error, Lost, etc.

Error Code

This is where an error code will be shown if the node is in an 'Error' state.

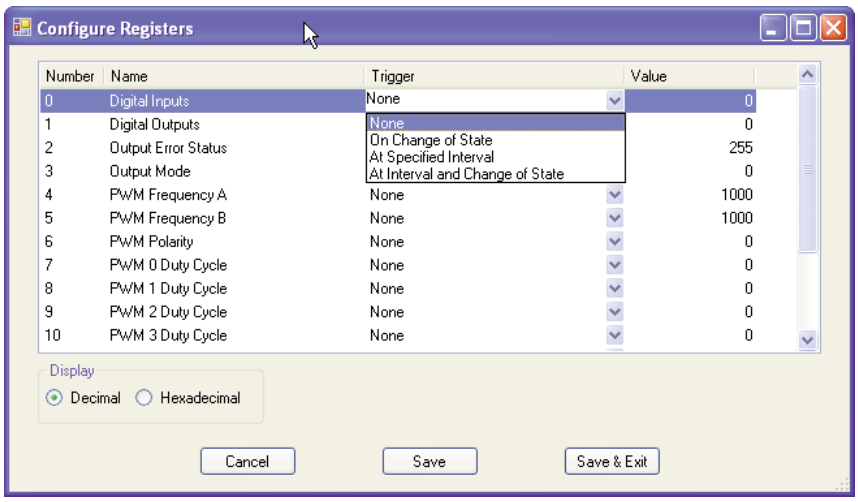
The **CONFIGURE REGISTERS** button is used to configure the registers of the device including the trigger and value. Click the **CONFIGURE REGISTERS** button to open the *Configure Registers* dialog box. See below.



To change the Trigger for any register, highlight the register and click the down arrow of the trigger column for the register that requires changing. This will open a small list of available trigger options. Each register maintains its own individual trigger setting. See Below.

When each of the registers of the node have been configured, click the **SAVE & EXIT** button to save changes and close the *Configure Registers* dialog box and return to the *Node Configuration*.

In addition to changing the trigger, from this dialog, the Value for each register can be changed (providing the register is writable). The numbers can be represented in decimal or in hex. The image below is set to display in decimal. As an example, register number 1 (Digital Outputs) will directly control the outputs on the node. By changing the Value, the outputs can be made to be on or off.



The numbers that are to be entered is a decimal representation of binary bits that correspond to the outputs themselves.

Decimal Number	128	64	32	16	8	4	2	1	0
Corresponding Output	8	7	6	5	4	3	2	1	All Off

Setting the value of the output register to 128 will cause only output 8 on the node to be ON.

Setting the value of the output register to 8 will cause only output 4 of the node to be ON.

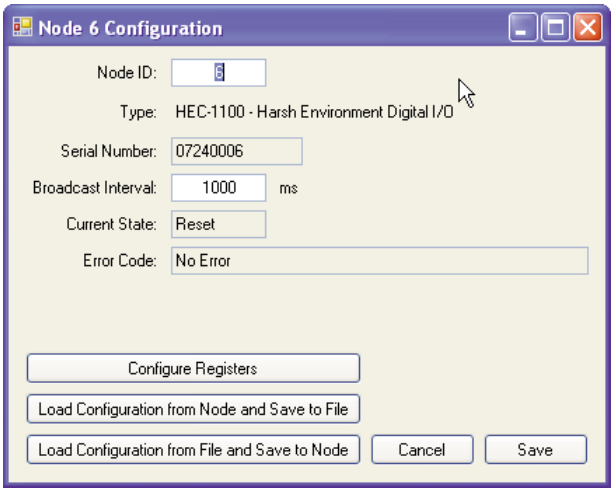
If the value of the output register is set to 40, output 6 and output 4 will both be ON (output 4 bit = Decimal 8, output 6 bit = Decimal 32. 32 + 8 = Decimal 40).

The number shown as examples above are for decimal only. If using Hexidecimal, they must be converted appropriately.

Changes here are immediate after clicking **SAVE** or **SAVE& EXIT**.

Loading / Saving Node Configurations

Node configurations may be read from a file and loaded to a node and node configurations may be loaded from a node and stored to a file.



To read a node configuration from a node and store to a file, click the **LOAD CONFIGURATION FROM NODE AND SAVE TO FILE** button. To read a node configuration from file and store to a node, click the **LOAD CONFIGURATION FROM FILE AND SAVE TO NODE** button.

OptiCAN Network Register Assignments

The OptiCAN network operates based on preset and user defined registers. The following are general register assignments and information common for all OptiCAN enabled controllers and devices. For non-controller devices, please consult the product's datasheet for detailed register assigments and preset functions.

General Register Assignments

These are the overall general register assigments common to all OptiCAN enabled devices.

Register Number	Assigned Use
0 to 127	User Defined Registers (Controller), Device Defined Registers (I/O & Other Devices)
128 to 191	Common Broadcast Registers
192 to 255	Common Configuration & Command Registers

User Defined registers for controllers are available for the user to define the use of during the ladder diagram development.
Device Defined registers for I/O and other devices have preset definitions of register use and cannot be changed.

Common Configuration / Command Registers

These registers are pre-assigned and cannot be altered.

Register Number	Name	Description	Read / Write
255	Node ID	This Node's ID Number	Read
254	Serial Number	This Node's Serial Number	Read
253	Broadcast Interval	Interval for Broadcasting (ms)	Read / Write
252	Broadcast Trigger 0	Broadcast Trigger for Registers 0 to 15	Read / Write
251	Broadcast Trigger 1	Broadcast Trigger for Registers 16 to 31	Read / Write
250	Broadcast Trigger 2	Broadcast Trigger for Registers 32 to 47	Read / Write
249	Broadcast Trigger 3	Broadcast Trigger for Registers 48 to 63	Read / Write
248	Broadcast Trigger 4	Broadcast Trigger for Registers 64 to 79	Read / Write
247	Broadcast Trigger 5	Broadcast Trigger for Registers 80 to 95	Read / Write
246	Broadcast Trigger 6	Broadcast Trigger for Registers 96 to 111	Read / Write
245	Broadcast Trigger 7	Broadcast Trigger for Registers 112 to 127	Read / Write
244	Broadcast Trigger 8	Broadcast Trigger for Registers 128 to 143	Read / Write
243	Broadcast Trigger 9	Broadcast Trigger for Registers 144 to 159	Read / Write
242	Broadcast Trigger 10	Broadcast Trigger for Registers 160 to 175	Read / Write
241	Broadcast Trigger 11	Broadcast Trigger for Registers 176 to 191	Read / Write

Register 191 (Node Status) is a 32-bit number. The lower 16-bits is the Status Code (Reset, Active, other). The upper 16-bits is the Error Code. The Error codes are split into two groups:

0 to 32767 Device Specific Errors
32768 to 65535 Common Error Codes.

Status Codes
1 = Reset
2 = Active
4 = Reset

Common Error Codes:
65535 = CAN Controller Receive Error
65534 = CAN Controller Receive Warning
65533 = CAN Controller Transmit Error
65532 = CAN Controller Transmit Warning
65531 = CAN Controller Bus Off State
65530 = CAN Controller Data Overrun
65519 = OptiCAN Heartbeat Timeout
65518 = CAN Controller Error

Common Broadcast Registers

These registers are pre-assigned and cannot be altered.

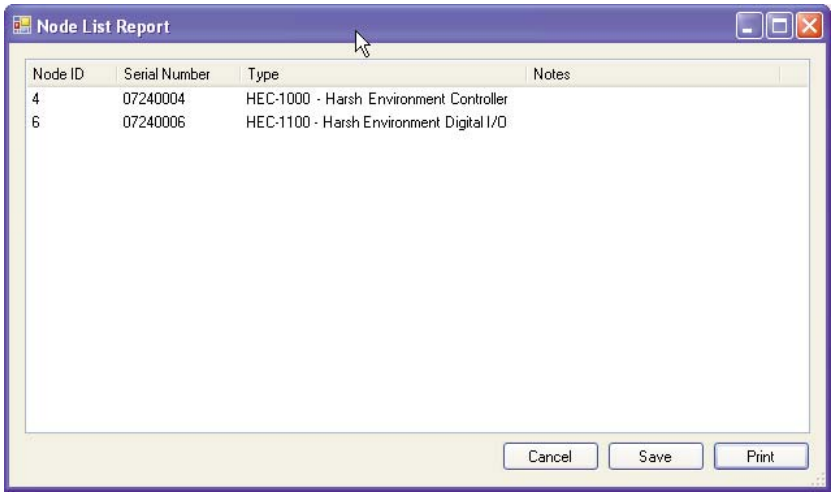
Register Number	Name	Description	Read / Write
191	Node Staus	This Node's Status	Read
190	CAN TX Errors	CAN Transmit Error Counter	Read
189	CAN RX Errors	CAN Receive Error Counter	Read

Node List Report

The OptiCAN Configuration Tool Professional provides a tool to View, Print and Save a list of the nodes on the currently active OptiCAN Network. Using the feature, you can view all the currently connected nodes, their Serial Number, Node ID and Description. A notes field is also provided to add unique notes and be able to print or save them.

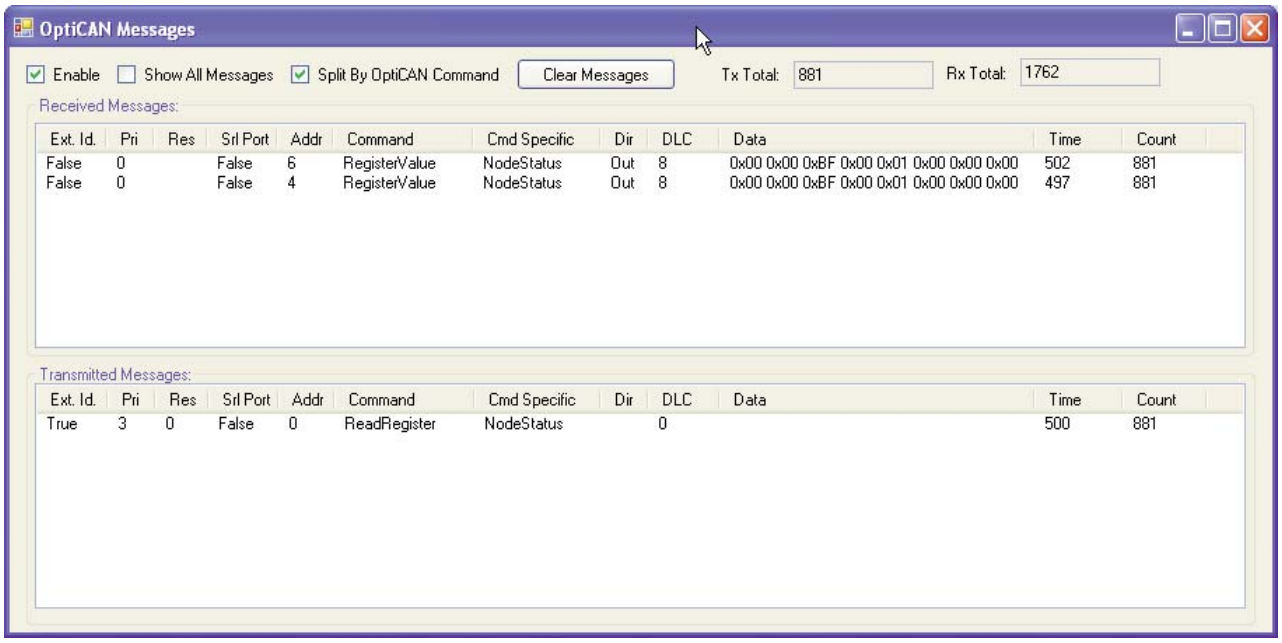
Choose the **PRINT** button to print the Node List Report. Choose the **SAVE** button to save the report as text (.txt) file. This file can be viewed using any text editor. One the window is closed, all the notes are lost (unless report was printed or saved).

To access this feature, click *Reports....Node List*. The Node List Report window will open. Place the cursor under the Note Heading next to the node of choice. Simply type in the notes for that node. See below.



Viewing Real Time OptiCAN Network Messages

To view in real time the OptiCAN Network messages, click *VIEW....OPTICAN MESSAGES*. The OptiCAN Messages window will open. From this window, real time data is displayed for all the OptiCAN Network traffic.



Logging OptiCAN Network Data

To log in real time the OptiCAN Network data, click *VIEW....OPTICAN LOGGING*. The OptiCAN Messages window will open. Enter a filename, choose or browse to a location and click **START LOGGING**.