LF Logik

User Guide

Contents

1. Introduction

LF Logik software is a powerful PC-based tool for configuring VM Next Generation Switches on a CAN network. The LF Logik software, when installed on a Windows PC and used in conjunction with a VM Next Generation Switch pack, whether the 3 or 6 switch pack, can be used to obtain a wealth of information on the switches and reconfigure the functionality of the VM Next Generation Switch pack on either a J1939 or CANopen network.

Features:

- List all the nodes on the CAN network
- Display the following information for each node that is a VM Next Gen Switch pack on a J1939 network:
  - Node Address
  - Number of Switches on Switch Pack
  - Switch Pack Serial Number
  - Switch Pack Software Version
  - Switch Pack Default Backlight Intensity
  - Switch Pack Backlight Enable State
  - Switch Pack Functional Indicator Default Intensity
  - Switch Pack Auto Sleep State
  - Switch Pack Orientation
  - Switch Pack Baud Rate
  - Physical Switch Type
  - Switch Pack PGNs
- Display the following information for each node that is a VM Next Gen Switch pack on a CANopen network:
  - Node ID
  - Number of Switches on Switch Pack
  - Switch Pack Serial Number
  - Switch Pack Software Version
  - Switch Pack Default Backlight Intensity
  - Switch Pack Backlight Enable State
  - Switch Pack Functional Indicator Default Intensity
  - Switch Pack Auto Sleep State
  - Switch Pack Baud Rate
  - Physical Switch Type
  - Switch Pack PGNs
- Modify information displayed with the exception of the serial number and software number, and the number of switches on the switch pack.
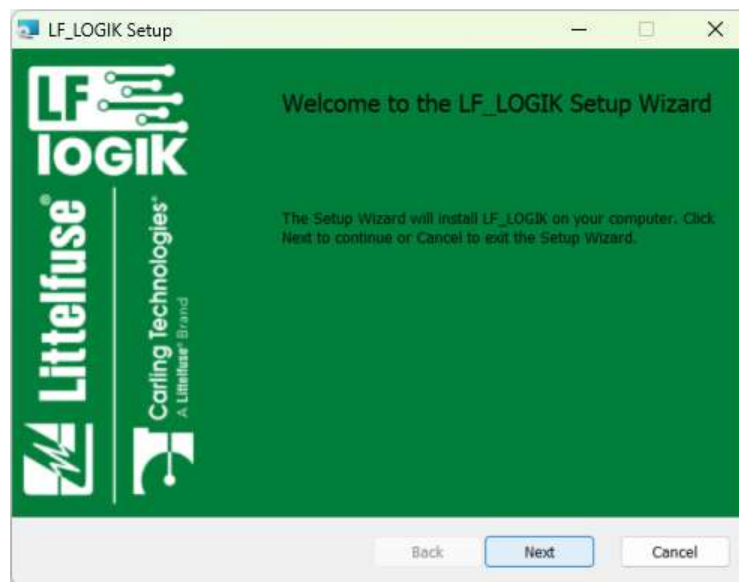
2. Recommended System Requirements

- PC running Microsoft Windows 11
- Either Kvaser or PEAK USB connecters
- LF Logik requires drivers for the associated connecter (Kvaser or PEAK)
- A VM Next Generation Switch Pack
- 1GB RAM
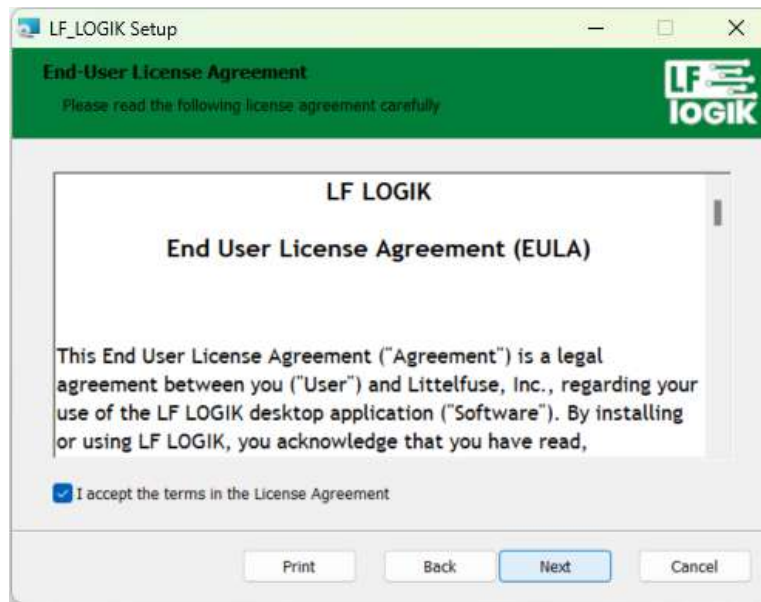- 31MB Hard Disk Space

3. Installation

The LF Logik may be obtained by download from the Carling Tech website at example site

The installer for LF Logik is packaged as an executable file. To install LF Logik, download the LF Logik installer from the internet at the link given above and save the executable file to your hard drive. Then, run the LF Logik installer as you would any other program. The LF Logik Installer will display the following screen:
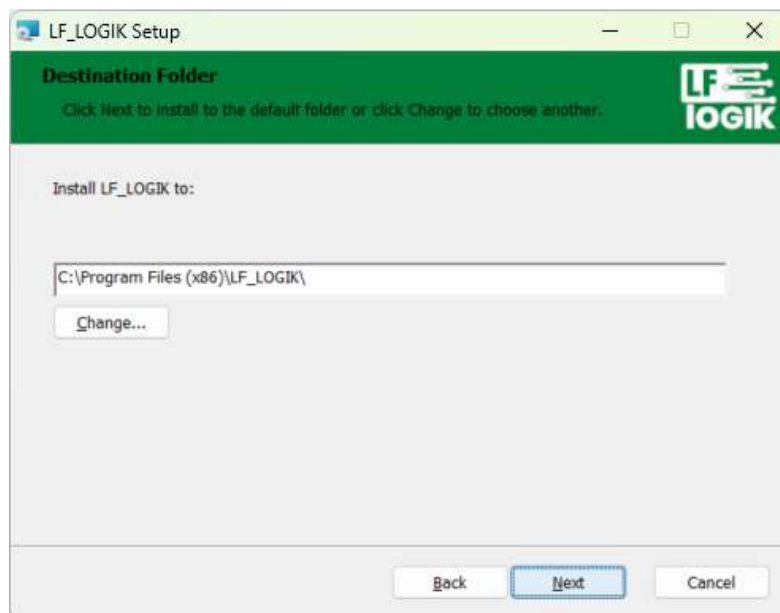

Figure 1 — LF Logik Installation Introduction Screen

Click the *Next* button to continue. The LF Logik installation program will then display the *End-User License Agreement* screen.

Figure 2 — End-User License Agreement Screen

Check the I accept the terms in the License Agreement box and click Next. The installer will then take you to the Select Destination Folder screen.

Figure 3 — Select Destination Folder Screen

This screen gives you the opportunity to change the default start menu folder into which LF Logik shortcuts will be placed. Once you are satisfied with the name of the start menu folder, click the Next button to continue. The LF Logik installation program will then display the *Ready to Install LF_Logik* screen.
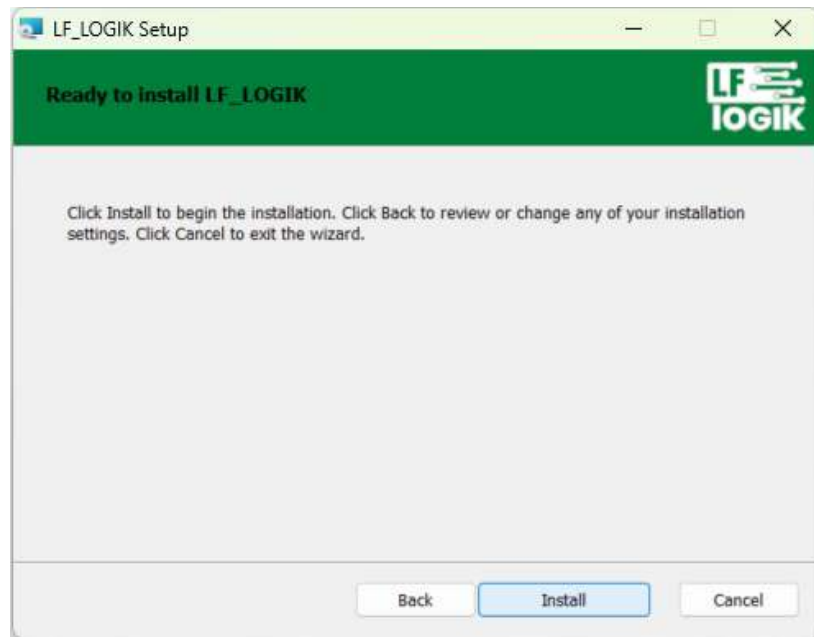
Figure 4 — Ready to Install LF_Logik Screen

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 LF Logik installation software will display the *Installing* screen to show the status of the installation
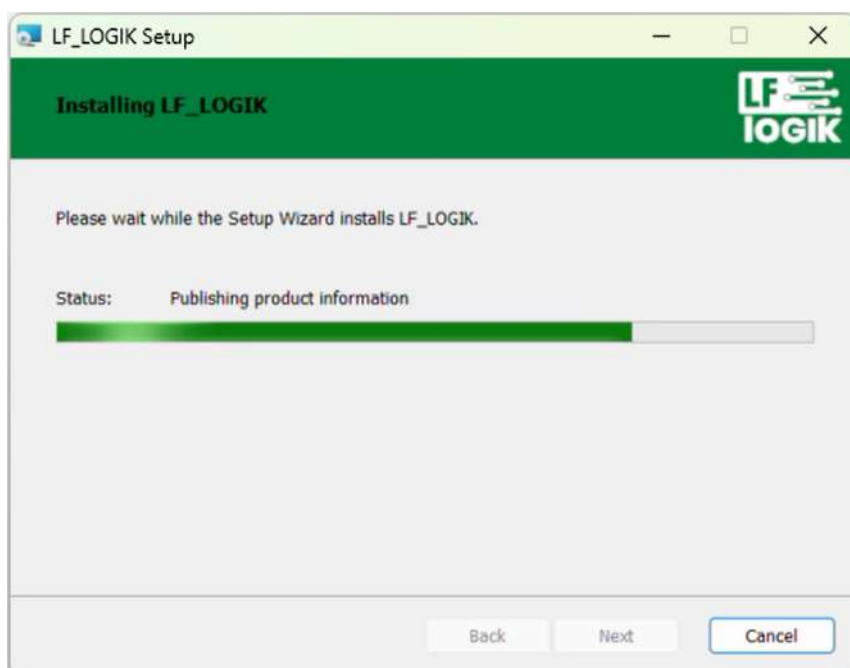

Figure 5 — Installing Screen

Once the installation of the software is finished, the LF Logik installation program will display the *Completed the LF Logik Setup Wizard* screen.

Figure 6 — Completed the LF Logik Setup Wizard

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

4. Start Up Tutorial

4.1. Starting the Software

You may start the LF Logik software in one of two ways:

- Selecting the All Programs → LF Logik menu item from the Start Menu.
- Searching for and opening it from the Start Menu

On startup the application will first display a splash screen.

Figure 7 — Splash Screen

Once it has completed loading the main application window will open and a *Connection Settings* window will pop up in front of it.
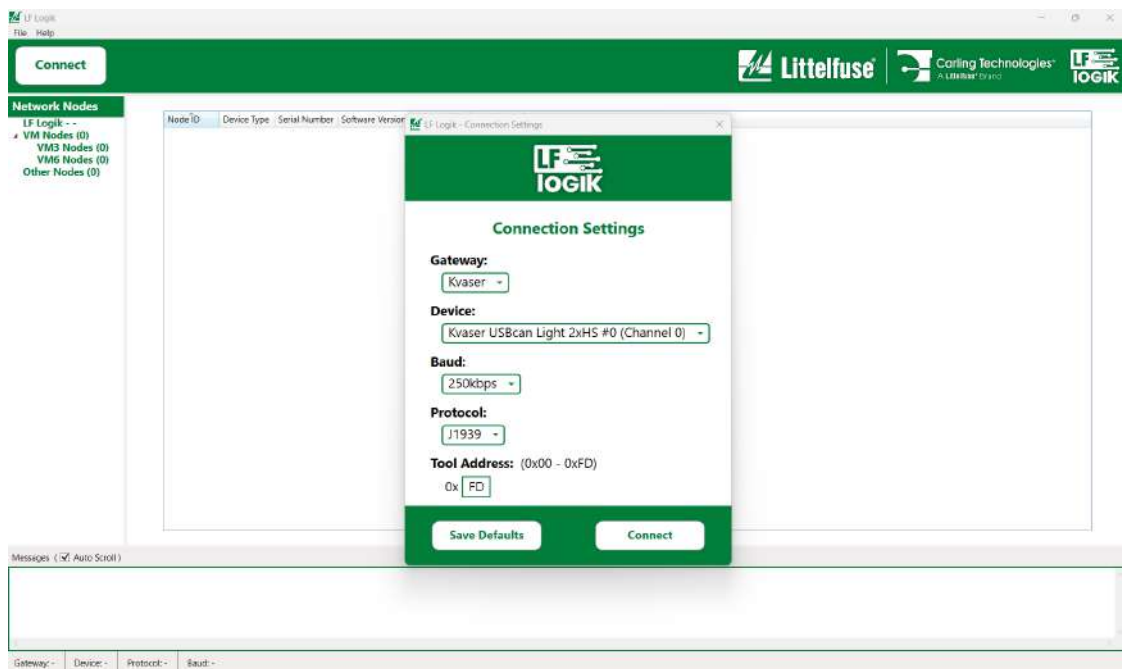

Figure 8 — Connection Settings Window with Main Window behind it

4.2. Starting with No Drivers

If neither PEAK nor Kvaser drivers are installed on the PC, then once the application starts the same windows will load with an incomplete view that does will not allow any action except to close the application.
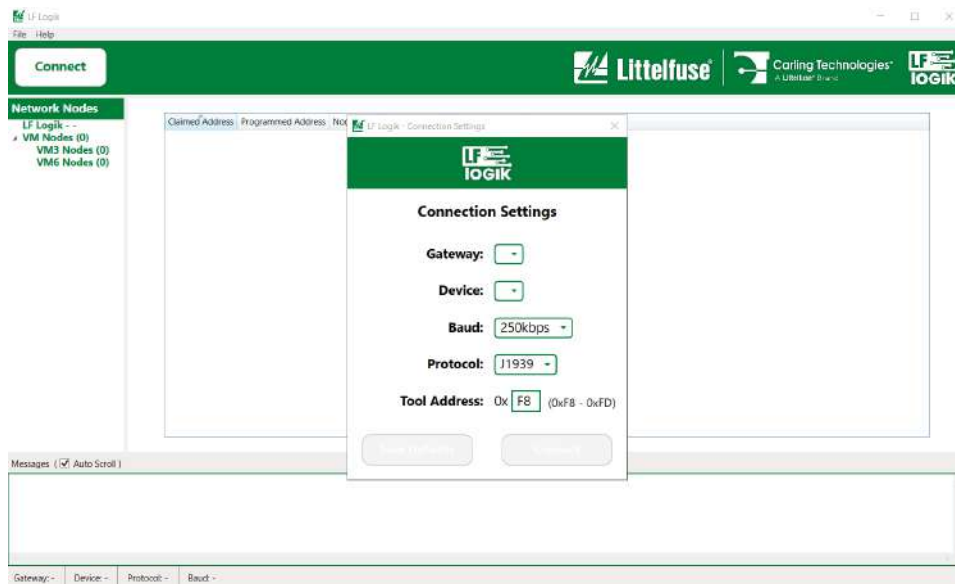
Figure 9 — Incomplete Connection Settings Window with Main Window behind it

4.3.   Choosing Connection Settings

LF Logik allows users to adjust the applications settings before it connects to the CAN network.
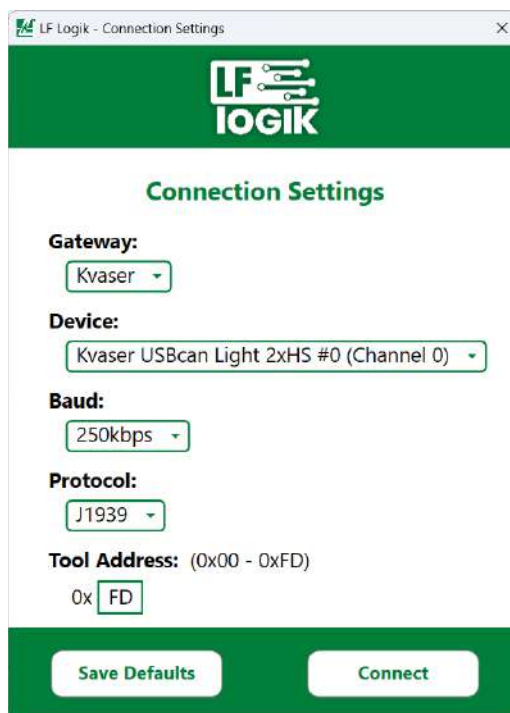

Figure 10 — Connection Settings Window

The choices are as follows:

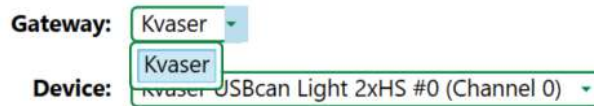- **Gateway** – Either Kvaser or PEAK

Figure 11 — Connection Settings Gateway Options

- **Device** – List is dependent on Kvaser and/or PEAK peripherals connected to the PC
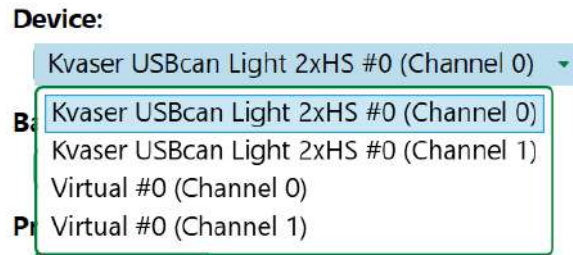

Figure 12 — Connection Settings Device Options

- **Baud** – 125kbps (only available with CANopen), 250kbps or 500kbps
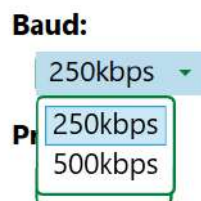

Figure 13 — Connection Settings Baud Options J1939
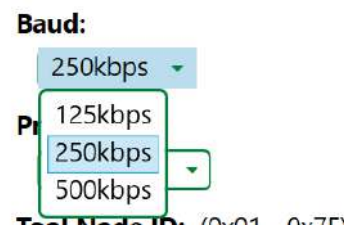

Figure 14 — Connection Settings Baud Options CANopen

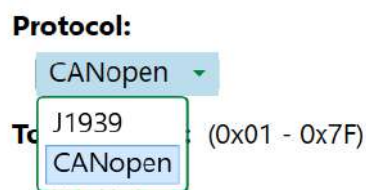- **Protocol** – Either J1939 or CANopen

Figure 15 — Connection Settings Protocol Options

- **Tool Address** – Anything within the range 0x00 to 0xFD for J1939, and 0x01 to 0x7F for CANopen.

Tool Address: (0x00 - 0xFD)

0x [FD]

Figure 16 — Connection Settings Address Input Field for J1939

Tool Node ID: (0x01 - 0x7F)

0x [7F]

Figure 17 — Connection Settings Address Input Field for CANopen

4.4.   Saving Connection Settings

To save a particular group of settings for a quicker start up process in the future, click the *Save Defaults* button. These will now be the new default settings the next time the application opens.
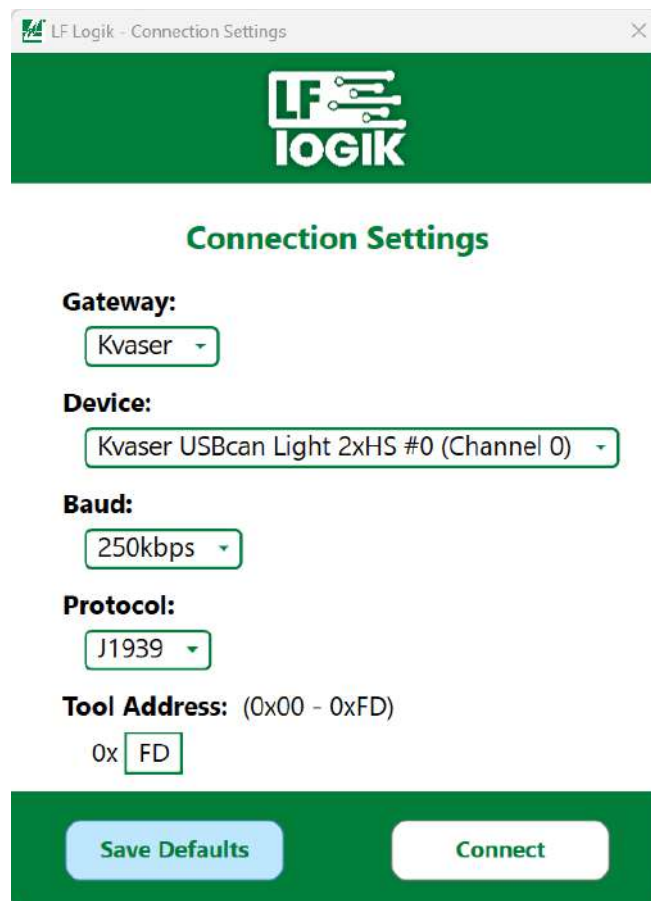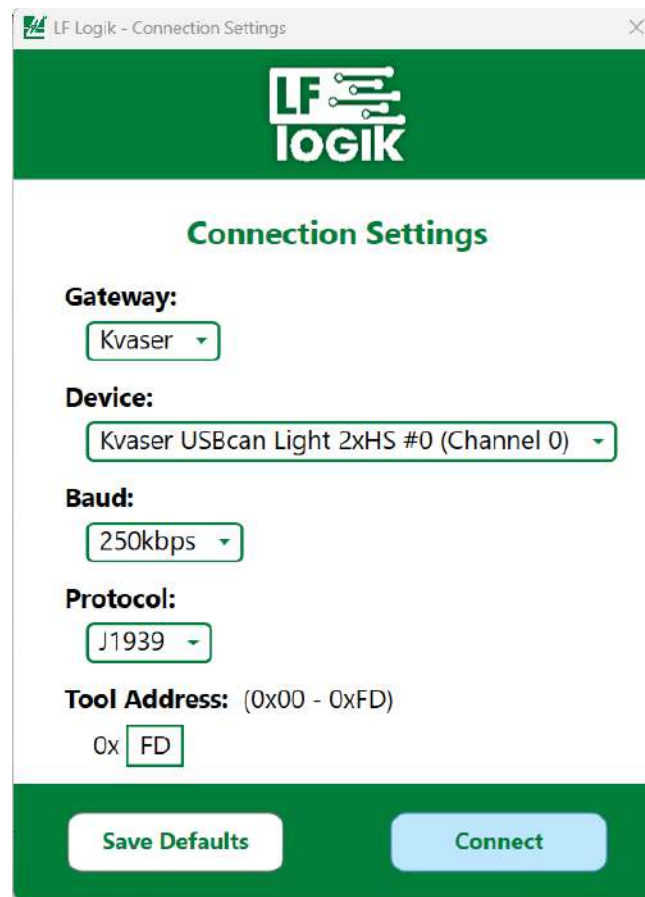

Figure 18 — Save Defaults button in Connection Settings Window

4.5. Connecting to the Network

Once all the connection settings have been set the *Connect* button can be clicked to connect to the CAN network.

Figure 19 — Connect button in Connection Settings Window

4.6. Viewing Network Nodes

Once the application is running and has successfully connected to the CAN network, any VM Switches on the network will be displayed on in a *Device List* table.

Claimed Address	Programmed Address	Device Type	Serial Number	Software Version	Manufacturer	Model
0x81	0x81	6 Switch VM	1	01.04.06		
0x82	0x81	3 Switch VM	11	01.04.06		
0x83	0x83	6 Switch VM	25	01.04.06		

Figure 20 — Device List Table in the Main Application Window (J1939)

Node ID	Device Type	Serial Number	Software Version	Manufacturer	Model
0x19	6 Switch VM	19	01.04.06	Littelfuse	NextGenVM
0x21	6 Switch VM	21	01.04.06	Littelfuse	NextGenVM
0x22	3 Switch VM	0	01.04.06	Littelfuse	NextGenVM

Figure 21 — Device List Table in the Main Application Window (CANopen)

The device address (J1939)/node ID (CANopen) is also listed under the appropriate section of the *Network Nodes* panel.

Network Nodes
LF Logik - 0xFD
⊿ VM Nodes (3)
⊿ VM3 Nodes (1)
0x82
⊿ VM6 Nodes (2)
0x81
0x83
Other Nodes (0)

Figure 22 — Network Nodes Panel in the Main Application Window (J1939)

Network Nodes
LF Logik - 0x7F
⊿ VM Nodes (3)
⊿ VM3 Nodes (1)
0x22
⊿ VM6 Nodes (2)
0x19
0x21
Other Nodes (0)

Figure 23 — Network Nodes Panel in the Main Application Window (CANopen)

5. Configuring Devices

5.1. J1939

5.1.1. Viewing Current 1939 Configuration

To view more information on a device either double click it in the *Device List* table or click it in the *Network Nodes* panel.

Claimed Address	Programmed Address	Device Type	Serial Number	Software Version	Manufacturer	Model
0x81	0x81	6 Switch VM	1	01.04.06		
0x82	0x81	3 Switch VM	11	01.04.06		
0x83	0x83	6 Switch VM	25	01.04.06		

Figure 24 — Selecting VM switch in Device List Table (J1939)

Network Nodes
LF Logik - 0xFD
▲ **VM Nodes (3)**
    ▲ **VM3 Nodes (1)**
        0x82
    ▲ **VM6 Nodes (2)**
        0x81
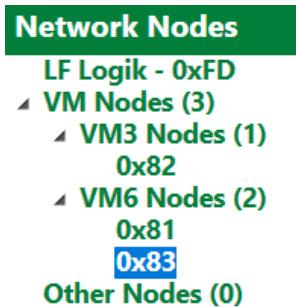   **0x83**
Other Nodes (0)

Figure 25 — Selecting VM switch in Network Nodes Panel (J1939)

This opens the configuration settings of the VM switch. The VM3 switches have 3 switch boxes, while the VM6 has 6: one for each switch in the pack.

Figure 26 — VM3 Switch Configuration Page (J1939)

Figure 27 — VM6 Switch Configuration Page (J1939)

5.1.2. J1939 Configurable Parameters

The configuration settings page for a J1939 programmed switch displays the following information:

- **Serial Number** – This shows the device's programmed serial number after manufacturing.
- **Software Version** – This shows the current version of firmware on the device.
- **Claimed Address** – This shows the current address of the node on the CAN network.
- **Programmed Address** – This shows the new address you would like the device to change to on the CAN network.
- **Baud Rate** – This shows the baud rate you would like the device to communicate on.

- **Status PGN** – This shows the PGN you would like to use to request the Transmission of the VM-Series Logical Channel Status.
- **Response PGN** – This shows the PGN you would like to use to request the Transmission of the VM status.
- **Auto Sleep Enabled** – This shows whether you would like the device to enter auto sleep after a period of inactivity.
- **Orientation** – This shows which orientation the VM switch is in based on its physical positioning (i.e. default/right way up or reverse/upside-down).
- **Default Backlight Brightness** – This shows the brightness of the backlight for all switches when they are turned on.
- **Default Functional Indicator Brightness** – This shows the brightness of the functional indicator for all switches when they are turned on.
- **Switch Type** – This shows how many positions the switch can take.
- **Backlight Enabled** – This shows whether the switch's backlight should be on or not.

5.1.3. Reading J1939 Switch Configuration

Once opened, the configuration page shows the configuration settings of the VM switch after an initial read. However, if these settings change either because of a physical action such as pressing a switch or there is an ECU on the network that is causing changes in the switch, then an updated version of the configuration settings can be read by clicking the *Read Config* button.

Figure 28 — Read Config Button on Configuration Page (J1939)

5.1.4. Writing J1939 New Configuration

Programmed Address

This takes a hexadecimal value that can be any value in the range of 0 (0x00) to 253 (0xFD). For the VM Switch to claim this address, a restart of the device is required. Although it is

important to note that if any other device had the same address, then the one with a lower serial number will take precedence.

Baud Rate

This is a drop-down list that contains the options 250kbps and 500kbps. For the VM Switch to start communicating at a different baud rate, a restart of the device is required.

Status PGN

This takes a hexadecimal value that can be any value not in use between 0 (0x0000) and 65279 (0xFFFF). For the VM Switch to claim this address, a restart of the device is required.

Response PGN

This takes a hexadecimal value that can be any value not in use between 0 (0x0000) and 65279 (0xFFFF). For the VM Switch to claim this address, a restart of the device is required.

Auto Sleep

This is a Boolean value represented as a check box. For the VM Switch to internally make this change, a restart of the device is required.

Orientation

This is a Boolean value represented by a radio group. For the VM Switch to internally make this change, a restart of the device is required.

Default Backlight Brightness

This is a percentage value controlled by text box. For the VM Switch backlights to change to this value, a restart of the device is required.

Default Functional Indicator Brightness

This is a percentage value controlled by text box. For the VM Switch functional indicator lights to change to this value, a restart of the device is required.

Switch Type

This is a value represented by a radio group that aligns with the desired functionality of a switch only having 2 positions, 3 positions or being disabled. For the VM Switch to internally make this change, a restart of the device is required.

Backlight Enable

This is a Boolean value for each channel of each switch represented by a check box to enable/disable the backlight.

Once all the desired configuration settings are set, they can be transmitted to the VM switch by clicking the *Write Config* button.

Figure 29 — Write Config Button on Configuration Page (J1939)

5.2. CANopen

5.2.1. View Current CANopen Configuration

To view more information on a device either double click it in the *Device List* table or click it in the *Network Nodes* panel.

Node ID	Device Type	Serial Number	Software Version	Manufacturer	Model
0x19	6 Switch VM	19	01.04.06	Littelfuse	NextGenVM
0x21	6 Switch VM	21	01.04.06	Littelfuse	NextGenVM
0x22	3 Switch VM	0	01.04.06	Littelfuse	NextGenVM

Figure 30 — Selecting VM switch in Device List Table (CANopen)

Figure 31 — Selecting VM switch in Network Nodes Panel (CANopen)

This opens the configuration settings of the VM switch. The VM3 switches have 3 switch boxes, while the VM6 has 6: one for each switch in the pack.

Figure 32 — VM3 switch configuration page (CANopen)

Figure 33 — VM6 switch configuration page (CANopen)

5.2.2. CANopen Configurable Parameters

The configuration settings page for a CANopen programmed switch displays the following information:

- **Serial Number** – This shows the device's programmed serial number after manufacturing.
- **Software Version** – This shows the current version of firmware on the device.
- **Programmed Node ID** – This shows the ID of the device on the CAN network.
- **Baud Rate** – This shows the baud rate you would like the device to communicate on.
- **Auto Sleep Enabled** – This shows whether you would like the device to enter auto sleep after a period of inactivity.
- **Default Backlight Brightness** – This shows the brightness of the backlight for all switches when they are turned on.
- **Default Functional Indicator Brightness** – This shows the brightness of the functional indicator for all switches when they are turned on.
- **Switch Type** – This shows how many positions the switch can take.
- **Backlight Enabled** – This shows whether the switch's backlight should be on or not.

5.2.3. Reading CANopen Switch Configuration

Once opened, the configuration page shows the configuration settings of the VM switch after an initial read. However, if these settings change either because of a physical action such as pressing a switch or there is an ECU on the network that is causing changes in the switch, then an updated version of the configuration settings can be read by clicking the *Read Config* button.

Figure 34 — Read Config Button on Configuration Page (CANopen)

5.2.4. Writing CANopen New Configuration

Programmed Node ID

This takes a hexadecimal value that can be any value in the range of 1 (0x01) to 127 (0x7F). For the VM Switch to claim this address, a restart of the device is required. Although it is important to note that no two nodes should have the same ID as this would confuse both devices and all nodes they are communicating with on the network.

Baud Rate

This is a drop-down list that contains the options 125kbps, 250kbps and 500kbps. For the VM Switch to start communicating at a different baud rate, a restart of the device is required.

Auto Sleep

This is a Boolean value represented as a check box. For the VM Switch to internally make this change, a restart of the device is required.

Default Backlight Brightness

This is a percentage value controlled by text box. For the VM Switch backlights to change to this value, a restart of the device is required.

Default Functional Indicator Brightness

This is a percentage value controlled by text box. For the VM Switch functional indicator lights to change to this value, a restart of the device is required.

Switch Type

This is a value represented by a radio group that aligns with the desired functionality of a switch only having 2 positions, 3 positions or being disabled. For the VM Switch to internally make this change, a restart of the device is required.

Backlight Enable

This is a Boolean value for each channel of each switch represented by a check box to enable/disable the backlight.

Once all the desired configuration settings are set, they can be transmitted to the VM switch by clicking the *Write Config* button.

Figure 35 — Write Config Button on Configuration Page (CANopen)

5.3. Device Disconnect

If, for any reason, the VM switch or the PC is disconnected from the CAN network while on the configuration page, the entire page will be disabled until the connection is restored.

Figure 36 — Device Disconnected Overlay Screen

5.4. Leave Configuration Page

To leave the configuration page and return to the *Device List* table, click the *Device List* button.
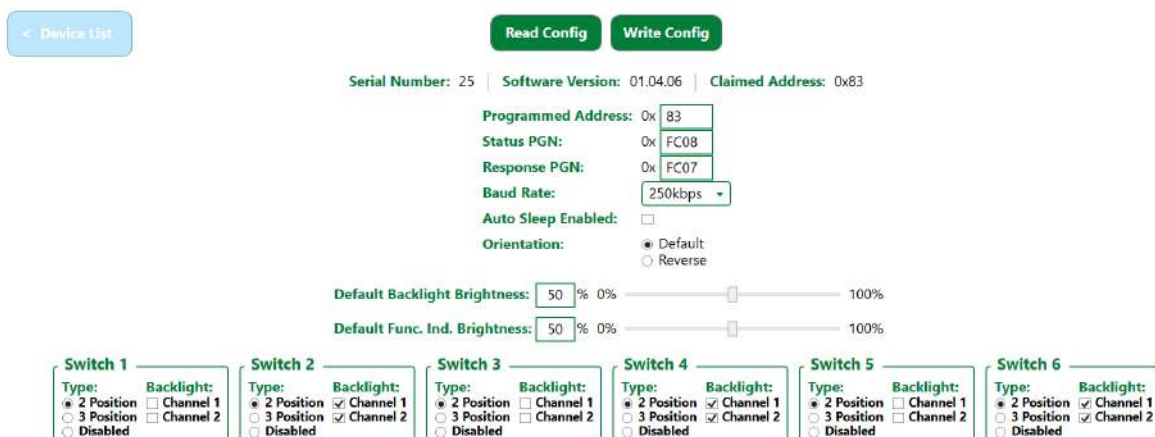

Figure 37 — Return to Device List Button

5.5. Network Disconnect

To temporarily disconnect the tool from the devices on the network, click the Disconnect button — which should then change from displaying "Disconnect" to displaying "Connect". Now the Device List table will be cleared as there is no way to know
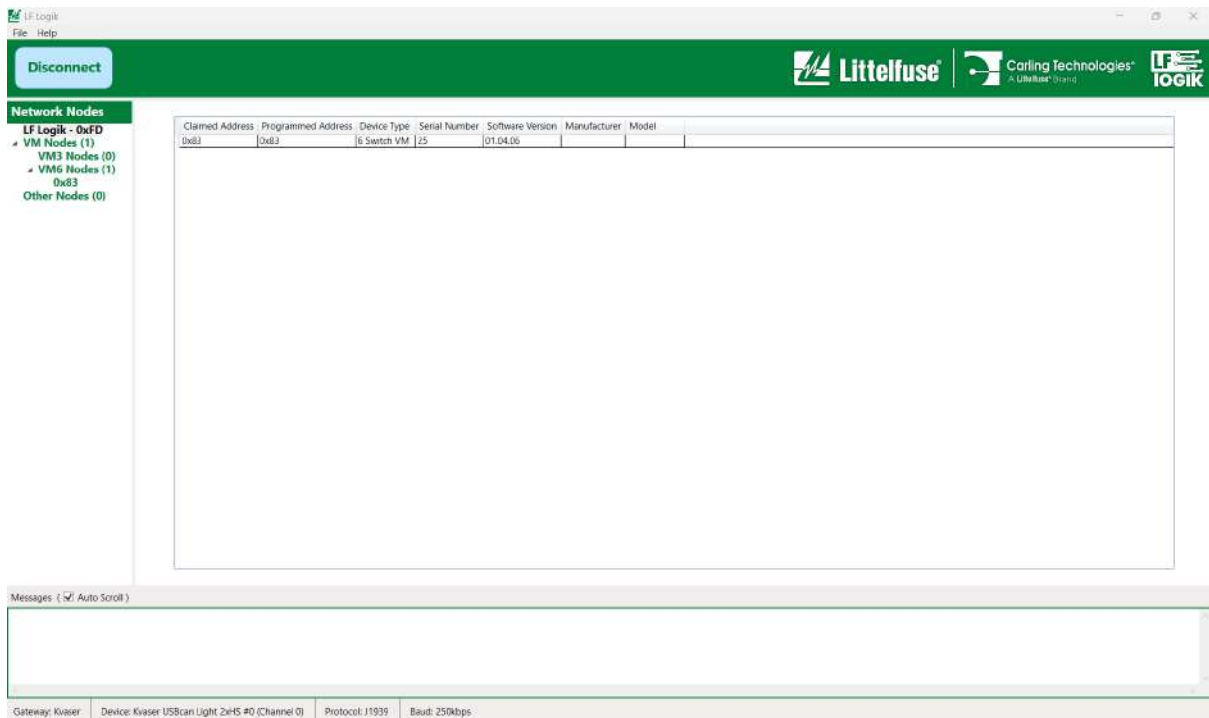
Figure 38 — Button to Disconnect Configuration Tool from Network

To reconnect the tool to the devices, click the Disconnect button — which should then change from displaying "Connect" to displaying "Disconnect".
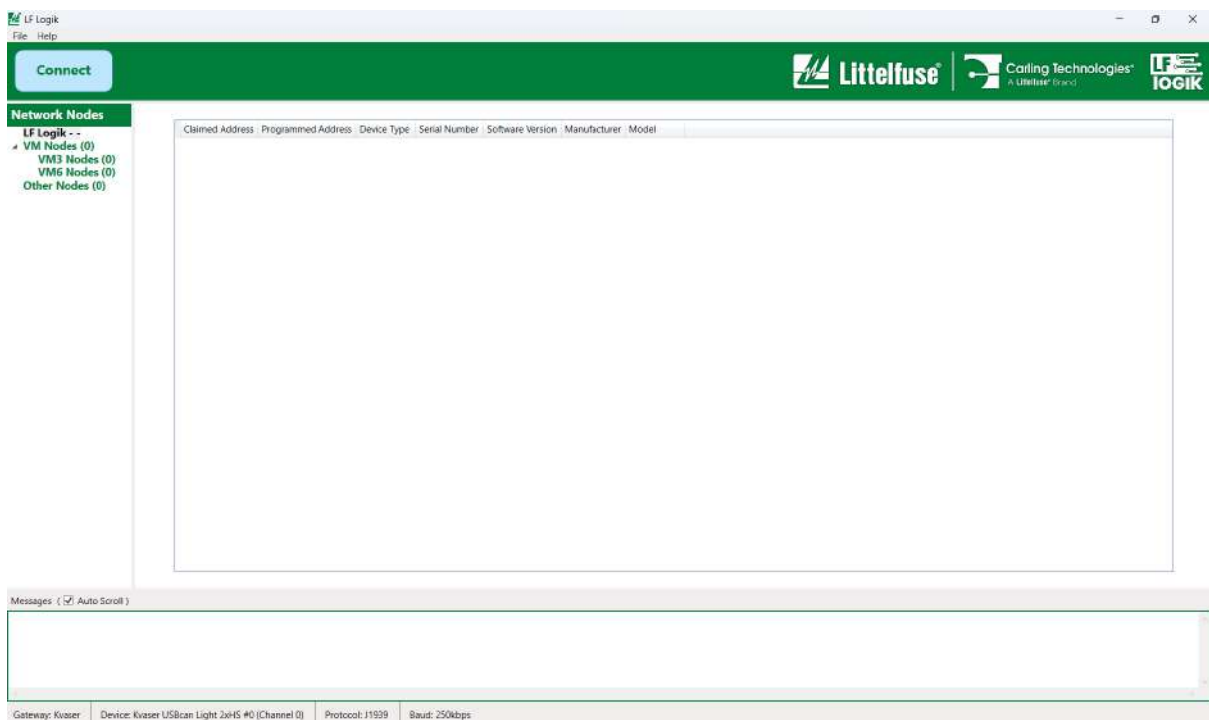

Figure 39 — Button to Connect Configuration Tool to Network

5.6. Update Connection Settings

If the connection settings of the tool need to change after fully starting up the tool. The connection settings can be altered by selecting File → Connection Settings… from the menu bar. This will then open the Connection Settings Window.
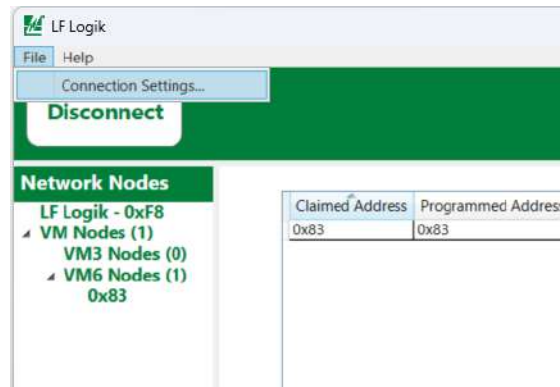

Figure 40 — How to Reopen the Connection Settings Window

6. Application Information

6.1. View LF Logik Software Version
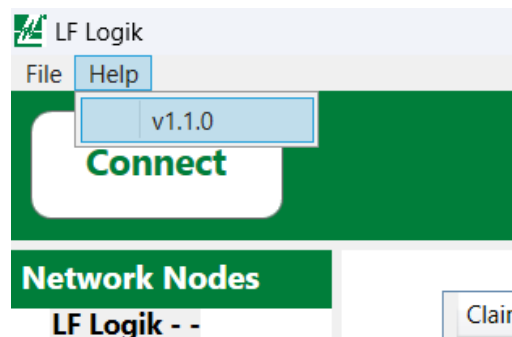
This is found Help in the menu bar.

Figure 41 — Location of Application Version Number

6.2. View Current Connection Settings

This is found on a bar at the bottom of the application.

Figure 42 — Current Connection Settings

7. Troubleshooting

SYMPTOM: Empty Device List

If the *Device List* table is unexpectedly empty, then check:

- *Protocol* matches that of the VM switch you expect to see
- *Baud* rate matches that of the VM switch you expect to see
- *Gateway* and *Device* are both the same type
- The VM switch is turned on
- The *Disconnect* button in the top left displays "Disconnect"

If none of this works, save the current configuration settings and restart the application. This is typical when changing configuration settings.

SYMPTOM: Auto Sleep Not Taking Effect

If the VM switch is not entering sleep after enabling auto sleep:

- Click Read Config to see what the actual value in the switch is. If the value was changed in the configuration tool but not written, then the functionality will not change
- Disconnect the device from the network. The network has messages constantly being sent from either the configuration tool or other nodes – even in the background, and these messages are keeping the device awake since it must filter them even if they aren't meant for it.

8. Technical Support

If you require technical support for LF Logik or VM Next Generation Switches, you can reach out to your Littelfuse point of contact.