Getting Started with DeviceLogix

This is a brief document designed to quickly get you started setting up your Numatics’ G2-2 DeviceLogix manifold. This document will discuss hardware setup, software setup, and troubleshooting techniques.

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1) G2-2 Electronics Basics

Below is an example of a 2005/2012 series manifold. This fieldbus manifold series is capable of addressing a total of 224 I/O. The manifold can be viewed as having two sections to it, the Valve Side and the Discrete I/O Side. The Valve Side supports a maximum of 32 solenoids coils and the Discrete I/O Side supports a maximum of 6 modules totaling 192 Outputs or 96 Inputs if used strictly as a DeviceNet node. When being used as a DeviceLogix node, the Discrete I/O Side is capable of 48 bindable outputs and 96 bindable inputs. The communication module has two connectors: a 5-pin communication connector and a 4-pin power connector. Pin outs for these are labeled on the side of the respective modules and on page 3 of this document.
2) Hardware Setup using RS 232 1770-KFD Module

This section will discuss the necessary hardware and setup required to communicate to the Numatics’ G2-2 DeviceLogix manifold using a RS 232 1770-KFD module. A 1784-PCD PCMCIA card is also available to communicate with a DeviceNet manifold instead of using the RS 232 1770-KFD module. For installation information regarding the 1784-PCD PCMCIA card, see Section 3 and 7 of this document. Listed below are the necessary components needed to communicate to a DeviceLogix manifold using a RS 232 1770-KFD module.

- The cables listed below have MINI style connectors. Please check to see if the Numatics’ manifold has either a MINI or Micro style connector for the communication connection. Both are available.

<table>
<thead>
<tr>
<th>Item</th>
<th>Vendor</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) +24 VDC Power Supply</td>
<td>Any</td>
<td></td>
</tr>
<tr>
<td>2) AC Power Supply Cable</td>
<td>Any</td>
<td></td>
</tr>
<tr>
<td>3) Female 5-pin MINI DeviceNet Cable</td>
<td>Numatics Inc.</td>
<td>MC0506FGD0000000*</td>
</tr>
<tr>
<td>4) Female 4-pin MINI Auxiliary Power Cable</td>
<td>Numatics Inc.</td>
<td>MC0402MAF0000000†</td>
</tr>
<tr>
<td>5) 3 Way MINI DeviceNet “T”</td>
<td>Numatics Inc.</td>
<td>MC0500000MT05000</td>
</tr>
<tr>
<td>6) MINI Male Terminating Resistor</td>
<td>Numatics Inc.</td>
<td>MA050000000000</td>
</tr>
<tr>
<td>7) RS 232 1770-KFD Module</td>
<td>Allen Bradley</td>
<td>1770-KFD</td>
</tr>
<tr>
<td>8) RS 232 1770-KFD AC Adapter Plug</td>
<td>Allen Bradley</td>
<td>1787-USADPTR</td>
</tr>
</tbody>
</table>

*Part Number is for 6 ft long cable. Cable is also available in 3 ft and 12 ft lengths.
†Part Number is for 2 m long cable. Cable is also available in 1 m and 5 m lengths.

- Item 8 (AC Adapter Plug) may not be necessary if user decides to apply bus power through the 5 pin Phoenix style field installable connector. Refer to Step 5 for further wiring information.

### Diagram

![Diagram of Hardware Setup](image-url)
Initial Hardware Setup

Once all of these components are obtained, the user can setup the hardware needed to communicate with the Numatics G2-2 DeviceLogix manifold. Here are the initial steps to setup the hardware:

1. Wire the AC power supply cable to the +24 VDC power supply. Also, wire the female 4-pin MINI auxiliary power cable to the +24 VDC power supply. When done correctly, the black and white wires should be wired to the V+ on the power supply and the brown wire should be wired to the V– or common on the power supply. (Note: this color arrangement is only for the corresponding cable above in the table and only works for the “Standard” Auxiliary pinout).

2. Test the female auxiliary power cable with a voltmeter and make sure the voltages match the pin-out label on the side of the module.

3. Open the RS 232 1770-KFD module box and find the 5 pin Phoenix style field installable connector (Will be gray and have 5 wire connection screw terminals).
4. Plug the 5 pin Phoenix style field installable connector into the RS 232 1770-KFD module.

5. Wire the leads of the female 5-pin MINI DeviceNet cable into the corresponding screw terminals on the 5 pin Phoenix connector that is plugged into the RS 232 1770-KFD module. Follow the color pattern located on the RS 232 1770-KFD module for correct wiring. (Note: The +24 VDC bus power can also be wired in through the Phoenix connector, this should be done in this step. +24 VDC should be wired in the terminal where the red wire is located. –24 VDC or common should be wired in the terminal where the black wire is located. This requires an extra cable to be completed, but the same +24 VDC power supply can be used to power both the manifold and the bus power. This makes it so the AC Adapter plug doesn’t need to be used.)

6. Unwrap the RS 232 1770-KFD AC adapter plug, and plug it into the RS 232 1770-KFD Module. (Note: Skip this step if the bus power is wired through the Phoenix connector. Bus power can be applied using EITHER the AC adapter plug OR +24 VDC power supply.)
7. Connect the bottom female connector of the MINI DeviceNet “T” onto the 5 pin male MINI connector located on the top of the Numatics G2-2 DeviceLogix Manifold.

8. Connect the MINI male terminating resistor on the exposed female end of the MINI DeviceNet “T”. (Note: A DeviceNet Network requires resistors on both ends of the network. For this setup only one external terminating resistor is needed, the second one is built into the RS 232 1770-KFD module).

9. Connect the female 5 pin DeviceNet cable (now connected to the RS 232 1770-KFD module by the use of a 5 pin Phoenix connector) into the male end of the MINI DeviceNet “T” located on the top of the Numatics’ G2-2 DeviceLogix manifold.

10. Find the 9 pin serial cable that came with the RS 232 1770-KFD module. Use this cable to connect your computer to your RS 232 1770-KFD module.
11. Connect the 4 pin female auxiliary power cable from the power supply into the top of the Numatics' G2-2 DeviceLogix Manifold.

12. Plug both the AC adapter from the RS 232 1770-KFD module and AC power supply cable from the +24 VDC power supply into a 110/120 VAC outlet.

13. Make sure the RS 232 1770-KFD Module is switched On (The LEDs located on the RS 232 1770-KFD module will blink when the switch is toggled into the ON position) and confirm that there is one blinking green LED labeled “Module Status” located on the RS 232 1770-KFD module.

14. Check to make sure that there are 3 solid green LEDs (+24V Node/In, +24V VLV/Out, and MOD Status) on the Numatics’ G2-2 manifold (Note: An amber colored LED may also appear. This LED appears if the internal logic in the DeviceLogix node is enabled. This will not affect the connection process). If there are any red or blinking green LED’s present, please see the troubleshooting section of this document.

15. You have successfully completed the initial hardware setup for communicating with a Numatics G2-2 DeviceLogix manifold, using the RS 232 1770-KFD module.
Quick Hardware Setup

Once the initial hardware setup is complete, many of the initial setup steps can be skipped. Here are the standard setup steps for the RS 232 1770-KFD hardware:

1. Connect the bottom female connector of the MINI DeviceNet “T” onto the 5 pin male MINI connector located on the top of the Numatics G2-2 DeviceLogix Manifold.

2. Connect the MINI male terminating resistor on the exposed female end of the MINI DeviceNet “T”.

3. Connect the Phoenix connector end of the 5 pin female DeviceNet cable to the RS 232 1770-KFD Module and the male end to the MINI DeviceNet “T”.

4. Connect the 4 pin female auxiliary power cable from the power supply onto the top of the Numatics' G2-2 DeviceLogix Manifold.

5. Connect your computer to the RS 232 1770-KFD module using the 9 pin serial cable.

6. Supply 24 VDC power to the RS 232 1770-KFD module either through an external power supply or a RS 232 1770-KFD AC adapter plug.

7. Make sure the RS 232 1770-KFD is switched On (The LEDs located on the RS 232 1770-KFD module will blink when the switch is toggled into the On position). Check that there is one solid green LED labeled “Module Status” located on the RS 232 1770-KFD module.

8. Check that there are 3 solid green LEDs on the Numatics’ G2-2 manifold (Note: An amber colored LED may also appear solid or flashing. This LED appears if the internal logic is enabled. This will not affect the connection process). If there are any red or flashing green LED’s present, please see the troubleshooting section of this document.

9. You have successfully completed the initial hardware setup for communicating with a Numatics G2-2 DeviceLogix manifold using the RS 232 1770-KFD module.
3) Hardware Setup using 1784-PCD PCMCIA Card

This section will discuss the necessary hardware and setup required to communicate to the Numatics’ G2-2 DeviceLogix manifold using a 1784-PCD PCMCIA card. For driver installation information regarding the 1784-PCD PCMCIA card, see Section 7 of this document. Listed below are the necessary components needed to communicate to a DeviceLogix manifold using a 1784-PCD PCMCIA card.

There are two different setups that can be used. The first one discussed uses two MINI DeviceNet “Tee”. This enables the setup to be disassembled easily. The “optional” setup wires the power supply directly to the 5 pin phoenix connector connected to the PCMCIA dongle. The two setups are shown in the following drawings.

**NOTE!**

The cables listed below have MINI style connectors. Please check to see if the Numatics’ manifold has either a MINI or Micro style connector for the communication connection. Both are available.

### Recommended Setup

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Vendor</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) +24 VDC Power Supply</td>
<td>1</td>
<td>Any</td>
<td></td>
</tr>
<tr>
<td>2) AC Power Supply Cable</td>
<td>1</td>
<td>Any</td>
<td></td>
</tr>
<tr>
<td>3) Female 5-pin MINI DeviceNet Cable</td>
<td>1</td>
<td>Numatics Inc.</td>
<td>MC0506FD0000000*</td>
</tr>
<tr>
<td>4) Male 5-pin MINI DeviceNet Cable</td>
<td>1</td>
<td>Numatics Inc.</td>
<td>MA0506FD0000000*</td>
</tr>
<tr>
<td>5) Female 4-pin MINI Auxiliary Power Cable</td>
<td>1</td>
<td>Numatics Inc.</td>
<td>MC0402MAF0000000†</td>
</tr>
<tr>
<td>6) 3 Way MINI DeviceNet “T”</td>
<td>2</td>
<td>Numatics Inc.</td>
<td>MC0500000MT05000</td>
</tr>
<tr>
<td>7) MINI Male Terminating Resistor</td>
<td>1</td>
<td>Numatics Inc.</td>
<td>MA050000000000000</td>
</tr>
<tr>
<td>8) 1784-PCD PCMCIA Card</td>
<td>1</td>
<td>Allen Bradley</td>
<td>1784-PCD</td>
</tr>
<tr>
<td>9) 120 Ohm Resistor</td>
<td>1</td>
<td>Any</td>
<td></td>
</tr>
</tbody>
</table>

*Part Number is for 6 ft long cable. Cable is also available in 3 ft and 12 ft lengths.
†Part Number is for 2 m long cable. Cable is also available in 1 m and 5 m lengths.

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**Diagram:**

1) +24 VDC Power Supply
2) AC Power Supply Cable
3) Female 5-pole MINI DeviceNet Cable
4) Male 5-pole MINI DeviceNet Cable
5) Female 4-pole Auxiliary Power Cable
6) 3 Way MINI DeviceNet “T” (2-way)
7) MINI Male Terminating Resistor
8) 1784-PCD PCMCIA Card
9) 120 Ohm Resistor (Band colors brown/red/brown) is wired to the white and blue labeled terminals.

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www.numatics.com/fieldbus
Optional Setup

<table>
<thead>
<tr>
<th>Item</th>
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<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) +24 VDC Power Supply</td>
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<td>Any</td>
<td></td>
</tr>
<tr>
<td>2) AC Power Supply Cable</td>
<td>1</td>
<td>Any</td>
<td></td>
</tr>
<tr>
<td>3) DeviceNet Cable</td>
<td>1</td>
<td>Any</td>
<td></td>
</tr>
<tr>
<td>4) Male 5-pin MINI DeviceNet Cable</td>
<td>1</td>
<td>Numatics Inc.</td>
<td>MA050FGD0000000*</td>
</tr>
<tr>
<td>5) Female 4-pin MINI Auxiliary Power Cable</td>
<td>1</td>
<td>Numatics Inc.</td>
<td>MC0402MAF000000†</td>
</tr>
<tr>
<td>6) 3 Way MINI DeviceNet “T”</td>
<td>1</td>
<td>Numatics Inc.</td>
<td>MC0500000MT05000</td>
</tr>
<tr>
<td>7) MINI Male Terminating Resistor</td>
<td>1</td>
<td>Numatics Inc.</td>
<td>MA0500000000000</td>
</tr>
<tr>
<td>8) 1784-PCD PCMCIA Card</td>
<td>1</td>
<td>Allen Bradley</td>
<td>1784-PCD</td>
</tr>
<tr>
<td>9) 120 Ohm Resistor</td>
<td>1</td>
<td>Any</td>
<td></td>
</tr>
</tbody>
</table>

*Part Number is for 6 ft long cable. Cable is also available in 3 ft and 12 ft lengths.
†Part Number is for 2 m long cable. Cable is also available in 1 m and 5 m lengths.
Initial Hardware Setup

Once all of these components are obtained, the user can setup the hardware needed to communicate with the Numatics G2-2 DeviceLogix manifold with the 1784-PCD PCMCIA card. Here are the initial steps to setup the hardware:

1. Wire the AC power supply cable to the +24 VDC power supply. Next, wire the female 4-pin MINI auxiliary power cable to the +24 VDC power supply. When done correctly, the black and white wires should be wired to the V+ on the power supply and the brown wire should be wired to the V– or common on the power supply (Note: this is only for the corresponding cable in the table and only the “Standard” Auxiliary power pinout). Finally, wire the female 5-pin MINI DeviceNet cable to the power supply (Note: Not necessary with “Optional” setup). This cable will supply power to the DeviceNet network. When done correctly, the red wire should be wired to the V+ on the power supply and the black wire should be wired to the V– or common on the power supply. The blue and white wires should be cut back and separated to not allow any shorts.

2. Test the female aux power cable and female 5-pin DeviceNet cable with a voltmeter and make sure the voltages match the pin-out label on the side of the module.

3. Open the 1784-PCD PCMCIA card box and find the 5 pin Phoenix style field installable connector (Should be gray and have 5 wire connection screw terminals).
4. Wire the female 5-pin MINI DeviceNet cable into the corresponding screw terminals on the 5 pin Phoenix connector. Follow the color pattern located on the 5 pin Phoenix connector and/or the RS 232 1770-KFD module for correct wiring. Also, wire in the 120 Ohm resistor between the white and blue labeled terminals. (Note: When using the “Optional” setup the +24 VDC bus power is going to be wired in through the Phoenix connector. +24 VDC should be wired in the terminal where the red wire is located. –24 VDC or common should be wired in the terminal where the black wire is located. This requires an extra cable to be completed, but the same +24 VDC power supply can be used to power both the manifold and the bus power.)

5. Connect the female connector side of the MINI DeviceNet “T” with the 5 pin male MINI connector located on the top of the Numatics G2-2 DeviceLogix Manifold.

6. Connect the side female connector of the other MINI DeviceNet “T” to the MINI DeviceNet “T” connected to the top of the manifold (Note: Extra “Tee” not used with “Optional” setup).

7. Plug the female 5 pin DeviceNet cable (now connected to the +24 VDC power supply) into the male end of the MINI DeviceNet “T”.
8. Plug the Male 5 pin DeviceNet cable (now connected to the 5 pin Phoenix connector) into the exposed female end of the MINI DeviceNet “T” located nearest to the Numatics’ G2-2 DeviceLogix Manifold.

9. Connect the MINI male terminating resistor on the exposed female end of the MINI DeviceNet “T” furthest away from the Numatics’ G2-2 DeviceLogix manifold.

10. Locate the 1784-PCD PCMCIA card and insert it into a laptop computer. Next, connect the dongle that came with the 1784-PCD PCMCIA card and plug it into the card.

11. Plug the 5 pin Phoenix connector into the end of the dongle that came with the 1784-PCD PCMCIA card.
12. Connect the 4 pin female auxiliary power cable from the power supply into the top of the Numatics' G2-2 DeviceLogix Manifold.

13. Plug the AC cable from the +24 VDC power supply into a 110/120 VAC outlet.

14. Check to make sure that there are 3 solid green LEDs (+24V Node/In, +24V VLV/Out, and MOD Status) on the Numatics' G2-2 manifold (Note: An amber colored LED may also appear. This LED appears if the internal logic in the DeviceLogix node is enabled. This will not affect the connection process). If there are any red or blinking green LED's present, please see the troubleshooting section of this document.

15. You have successfully completed the initial hardware setup for communicating with a Numatics G2-2 DeviceLogix manifold using the 1784-PCD PCMCIA card.
Quick Hardware Setup

Once the initial hardware setup is complete, many of the initial setup steps can be skipped. Here are the standard setup steps for the 1784-PCD PCMCIA hardware (Note: This quick setup is NOT for the “Optional” setup):

1. Connect the side female connector of the MINI DeviceNet “T” onto the 5 pin male MINI connector located on the top of the Numatics G2-2 DeviceLogix Manifold.

2. Connect the side female connector of the second MINI DeviceNet “T” to the MINI DeviceNet “T” connected to the top of the manifold.

3. Plug the female 5 pin DeviceNet cable (now connected to the +24 VDC power supply) into the male end of the MINI DeviceNet “T”.

4. Plug the Male 5 pin DeviceNet cable (now connected to the 5 pin Phoenix connector) into the exposed female end of the MINI DeviceNet “T” located nearest to the Numatics’ G2-2 DeviceLogix Manifold.

5. Connect the MINI male terminating resistor on the exposed female end of the MINI DeviceNet “T” furthest away from the Numatics’ G2-2 DeviceLogix manifold.

6. Locate the 1784-PCD PCMCIA card and insert it into a laptop computer. Next, connect the dongle that came with the 1784-PCD PCMCIA card and plug it into the card.

7. Plug the 5 pin Phoenix connector into the end of the dongle that came with the 1784-PCD PCMCIA card.

8. Connect the 4 pin female auxiliary power cable from the power supply into the top of the Numatics’ G2-2 DeviceLogix Manifold.

9. Plug the AC cable from the +24 VDC power supply into a 110/120 VAC outlet.

10. Check that there are 3 solid green LEDs on the Numatics’ G2-2 manifold (Note: An amber colored LED may also appear solid or flashing. This LED appears if the internal logic is enabled. This will not affect the connection process). If there are any red or flashing green LED’s present, please see the troubleshooting section of this document.

11. You have successfully completed the quick hardware setup for communicating with a Numatics G2-2 DeviceLogix manifold using the 1784-PCD PCMCIA card.
4) Software Setup

This section will discuss the installation procedure for the required software, RSNetworx for DeviceNet and RSLinx. Both software packages are located on the RSNetworx for DeviceNet installation disk. (Note: RSNetworx version 3.27 or later is required to communicate with Numatics’ G2-2 DeviceLogix manifold.) Before starting this software setup, please exit out of all windows applications.

1. Insert the RSNetworx for DeviceNet installation Disk into your CD drive. The disk will automatically start running. If this doesn’t happen, double click on the cd drive to start the setup window. It will look something like this:

![Software Setup Image]

2. Left click on the box labeled, “Required Steps”. (Note: This Setup procedure will only show the user how to install the necessary components needed to communicate to a Numatics’ G2-2 DeviceLogix manifold.) The “Required Steps:” window will open.

![Required Steps Image]
3. In the “RSNetworx for DeviceNet Required Step” window, the user can view the release notes and install a few different software programs. Left click on the, “Install RSLinx *,**, (Note: The revision levels of the different software packages may not match the ones shown in this setup procedure.) This will install RSLinx. Follow the on screen directions and left click, “Finish”, to finish the RSLinx install.

4. The InstallShield Wizard window will appear. Left click on “Next”. Next, the licensing agreement will appear. Read through the terms. Once completed, select, “I accept the terms in the licensing agreement”, and left click “Next”. The wizard will next prompt for a “User Name” and “Organization”. Fill in the appropriate data and left click “Next”. The program will then prompt you to choose features. To choose the default settings, left click “Next” and then “Install” to begin the installation procedure. Finally, it will prompt you with a window that says the install is finished. Left click on “Finish”. You have completed installing RSLinx.
5. Left click “Exit” to exit out of the RSLogix window, then left click “Install RSNetwrx Prerequisite Software”. The InstallShield Wizard window will appear. Left click on “Next”. Next, the licensing agreement will appear. Read through the terms. Once completed, select, “I accept the terms in the licensing agreement”, and left click “Next”. Left click “Install” to begin the installation of the prerequisite software. Finally, it will prompt you with a window that says the install is finished. Left click on “Finish”. You have completed installing the RSNetwrx Prerequisite Software.

6. Next, install RSNetwrx for DeviceNet by left clicking “Install RSNetwrx”. A window will inform the user to exit out of other applications. Left click, “Next”. The licensing agreement now will appear. Read through the terms. Once completed, select, “Yes”. The install wizard will then verify the presence of required system files. Left click, “Next”. The wizard will next prompt for a “Name”, “Company” and “Serial Number”. Fill in the appropriate data and left click “Next”. The wizard with then ask you to select components. Make sure “RSNetwrx for DeviceNet”, “Hardware for DeviceNet”, and “Program Files” are all checked. The others are optional. Left click, “next”. The following window will contain two checkmarks “Activate RSNetwrx” and “View Readme File”. Left click “Next”. The activation window now will appear. Enter the correct drive and left click, “Ok”. (Note: If activation disk is not readily available, left click on “Cancel” when the activation window opens. This will put the software into DEMO mode until the software is activated). Finally, left click “OK” in the Information window seen below.

7. Exit out of the CD setup window and restart the computer. You have successfully installed RSLogix and RSNetwrx for DeviceNet.
5) EDS File Download and Registration (Unregistration)

This section will discuss the registration procedure of EDS (Electronic Data Sheet) files, electronic files used by RSNetworx to identify different devices on a DeviceNet network. The EDS file includes important attributes about the device. For RSNetworx to recognize a Numatics G2-2 DeviceLogix manifold, the corresponding EDS file needs to be installed. The following steps will show how to register an EDS file into RSNetworx. (Note: EDS files are often updated. Please make sure you have the most current EDS files. The old EDS files need to be unregistered before the new ones are registered. Unregistering an EDS file will also be discussed in this section.)

1. **Requires internet access.** Go to www.numatics.com. Left click on “File Downloads” underneath “Support” section. Next, left click on the choice labeled “Fieldbus”. This will open the search window (shown below). This window will be used to find the correct EDS file for the Numatics G2-2 DeviceLogix Manifold.

![Image of search window]


![Image of search result]

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3. The results will be shown. For this example we will choose the current EDS file for the 2005/2012 valve series. Left click on the file name “NumaticsEDSG2-2dlsv249.zip” or the most current file. Save the file to your computer. (Note: Both an archive file and standard EDS file is listed. The archive file is ONLY for modules dated prior to November 25, 2003.)

4. The file will save as a “.zip” file on your computer. A program, such as WinZip or WinAce, will be needed to extract the files into a useable format. Extract both the “.eds” and “.ico” file into any folder located on the computer. Remember the name and location of the folder.
5. The files are now ready to be installed into RSNetworx. Open RSNetworx for DeviceNet by going to “All Programs” in the start menu of windows. Then go to the “Rockwell Software” tab. Next go the RSNetworx tab. Finally, left click on “RSNetworx for DeviceNet”. The following window will appear:

6. Next, left click on the “Tools” option in the menu bar. Scroll down to “EDS Wizard” and left click on it. The following screen will appear:
7. Left click “Next” to get to the options screen. Make sure that the “Register an EDS file” option is chosen and left click “Next”. (Note: This is also where the user can choose to uninstall an old EDS file to update it with a new one. Choose “Unregister a device” to start this procedure. A window will appear listing all current devices. Choose the one that you want to uninstall and left click “Next”. Continue to follow the on screen directions to finish the unregistration procedure. **Be sure to restart RSNetworx for the changes to take effect.**) Note: A new version of a previously installed EDS file cannot be installed until the original version is uninstalled, and RSNetworx for DeviceNet is restarted.

8. The registration window will now open. This is where the user chooses the EDS file to install. Browse for the Numatics’ G2-2 DeviceLogix manifold EDS file which was extracted in Step 4. Once the file is located, select it and left click “Open”. The file extension location will appear in the “Browse” box. Left click “Next” to continue on to the next step.
9. An information window will appear. Left click “Next” to continue on. A few more information windows will appear. Left click “Next” until you reach this window. Left click “Finish” to end the Rockwell Software EDS Wizard.

![Completing the EDS Wizard]

10. A folder labeled “Numatics Inc” will appear under the “Vendor” folder. This is where the Numatics EDS files are stored. Close and restart RSNetworx for DeviceNet after registering/unregistering an EDS file.

![Vendor folder]

11. You have successfully completed the EDS file registration (unregistration) process.
6) RS 232 1770-KFD Driver Setup and Configuration

This section will discuss the software driver setup for the RS 232 1770-KFD module. This is the gateway device that allows the user communicate with a DeviceNet network using a serial port on a personal computer. (Note: If a computer does not have a serial port, a serial to USB cable interface can be bought at most electronic stores. Setting up a Serial to USB cable interface will be discussed in a later section.)

1. **Requires initial/quick hardware setup to work.** The RS 232 1770-KFD module drivers can only be installed while communicating to a DeviceNet network. Make sure all the LEDs are lit properly and that all the connections are made. Please see the troubleshooting section of this document if having technical issues/questions.

![Image of RS 232 1770-KFD Module](image1)

2. Once the initial/quick setup is complete. Open RSLinx by going to “All Programs” in the start menu of windows. Then go to the “Rockwell Software” tab. Next go the “RSLinx” tab. Finally, left click on “RSLinx”. The following window will open:

![RSLinx Window](image2)

3. Left click on the “Communications” option in the menu bar. Scroll down to “Configure Drivers..” and left click on it. The following screen will appear:

![Configure Drivers Window](image3)
4. Use the drop box under “Available Driver Types” to choose “DeviceNet Drivers (1784-PCD/PCIDS,1770-KFD,SDNPT drivers)”. With this option highlighted, left click the “Add New…” button.

5. In the “DeviceNet Driver Selection – RSLinx DeviceNet-2”, select the “Allen-Bradley 1770-KFD” option. Left click “Select”.

6. The “Allen-Bradley 1770-KFD Driver Configuration” window will now appear. This is the screen where the user configures: Port Select, Data Rate (for Serial Port), Node Address, and Data Rate (for DeviceNet Port). Make sure that the correct port is selected and left click “OK”.

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7. A window will appear that will ask you to name the driver. Type a name in (or keep the default one) and left click “OK”.

8. The “Configure Drivers” window will appear again. Make sure that the RS 232 1770-KFD module is running. This information is listed under the section labeled, “Configured Drivers”. Left click “Close” and exit out of RSLinx.

9. You have successfully configured the drivers for the RS 232 1770-KFD module.
7) 1784-PCD PCMCIA Installation, Driver Setup and Configuration

This section will discuss the software driver setup for the 1784-PCD PCMCIA card. This is another gateway device that allows the user communicate with a DeviceNet network using the PCMCIA port on a laptop computer. (Note: The following step-by-step setup was done on a computer with Windows XP Professional. The setup steps may be different on different operating systems.)

1. The 1784-PCD PCMCIA card may need window drivers installed to be a recognized device. If the following window appears when the card is inserted into the computer, then the window drivers must be installed. To begin installation, locate the correct installation disk supplied with the 1784-PCD PCMCIA card (Multiple disks come packaged with the card. Choose the one designed for your particular operating system) and insert the disk into the floppy drive. Select “No, not this time”, and left click next.

2. Select “Install from a list or specific location (Advanced)” and left click “Next”.

---

[Image of installation process]
3. Select “Search for the best driver in these locations” and browse for the floppy drive. Highlight the 3½ floppy drive and left click “OK”. The A:\ drive will appear in the “Browse” drop box. Make sure that “Include this location in the search” is checked and left click “Next”.

4. The 1784-PCD PCMCIA card will now get installed. The following window will appear showing the installation of the card.
5. The final installation window will appear. Left click “Finish” to finish the installation.

6. The 1784-PCD PCMCIA card is now installed on the computer. The next step is to install the drivers in RSLogix.

7. Requires initial/quick hardware setup to work. The 1784-PCD PCMCIA card drivers can only be installed when communicating to a DeviceNet network. Make sure all the LEDs on the DeviceLogix manifold are lit properly and that all the connections are made. Please see the troubleshooting section of this document if having technical issues/questions. (Note: Terminator resistors must be used on both ends of the network.)

8. Once the initial/quick setup is complete. Open RSLogix by going to “All Programs” in the start menu of windows. Then go to the “Rockwell Software” tab. Next go the “RSLogix” tab. Finally, left click on “RSLogix”. The following window will open:
9. Next, left click on the “Communications” option in the menu bar. Scroll down to “Configure Drivers..” and left click on it. The following screen will appear:

![Configuration Drivers Screen](image)

10. Use the drop box under “Available Driver Types” to choose “DeviceNet Drivers (1784-PCD/PCIDS,1770-KFD,SDNPT drivers)”. With this option highlighted, left click the “Add New…” button.

![Configuration Drivers Screen](image)


![DeviceNet Driver Selection Screen](image)
12. The “1784-PCD Driver Configuration” window will now appear. This is the screen where the user configures: Node Address, Network Baud Rate, and Auto Address. The user can also run the 1784-PCD PCMCIA card diagnostics and other tools. Left click “OK” to continue once the configuration is complete. (Note: The network baud rate will be defaulted to 125 on all Numatics G2-2 DeviceLogix nodes.)

10. A window will appear that will ask you to name the driver. Type a name in (or keep the default one) and left click “OK”.

11. The “Configure Drivers” window will appear again. Make sure that the 1784-PCD PCMCIA card is running. This information is listed under the section labeled, “Configured Drivers”. Left click “Close” and exit out of RSLinx.

12. You have successfully configured the drivers for the 1784-PCD PCMCIA card.
8) USB to Serial Installation and Configuration

This section will discuss the installation and configuration for a USB to serial port converter. Many new computers do not include a serial connector port to connect a RS 232 1770-KFD module to. Most computers do have a USB port on them. This guide will help the user utilize this USB port to connect to a RS 232 1770-KFD module. (Note: Not all USB to serial converters will work with the cable included in the RS 232 1770-KFD module box. Some USB to serial converters require handshaking while other ones do not. The RS 232 1770-KFD module does not require handshaking. Make sure the converter used does not require handshaking. A known functional converter is the Keyspan USB to serial converter Part Number 96881501.)

1. The USB to serial converter will need window drivers installed to be a recognized device. The following window will appear when the converter is inserted into the computer. To begin installation, locate the driver disk that came with the converter and insert the disk into the floppy drive. Select “No, not this time”, and left click next. (Note: This step-by-step setup was done on a computer with Windows XP Professional. The setup steps may be different on different operating systems.)

2. Select “Install from a list or specific location (Advanced)” and left click “Next”. 
3. Select “Search for the best driver in these locations” and browse for the floppy/disk drive (Depending on the media the driver is located on). Highlight the drive and left click “OK”. A drive will appear in the “Browse” drop box. Make sure that this drive is correct, that “Include this location in the search” is checked, and left click “Next”.

4. The USB to serial converter will now be installed. The following window will appear showing the installation of the converter.
5. The final installation will appear. Left click “Finish” to finish the installation.

![Found New Hardware Wizard]

6. The USB to serial is now installed on the computer. The next step is to install the drivers for the RS 232 1770-KFD module in RSLinx. Follow the setup procedure for the RS 232 1770-KFD module to install the drivers. *(Note: Different computers have different COM ports defaulted. If the RS 232 1770-KFD module does not respond to a “COM 1” port selection. Try another port number until it does respond.)*

![Allan Bradley 1770 KFD Driver Configuration]
9) Changing the Address of a Node (Node Commissioning)

This section will discuss how to change an address of a node on a DeviceNet network. All the Numatics’ G2-2 DeviceLogix manifolds have an address default of 63 from the factory. If the user is running multiple nodes or is only using the demo version (which allows the user to only view nodes addressed 0-5) of the software, then the address will need to be changed. This section will discuss that process step by step. (Note: Changing a nodes address will be called Node Commissioning through the rest of this section.)

1. First, open RSNetworx for DeviceNet by going to “All Programs” in the start menu of windows. Then go to the “Rockwell Software” tab. Next go the RSNetworx tab. Finally, left click on “RSNetworx for DeviceNet”. The following window will appear:

![RSNetworx window]

2. Next, left click on the “Tools” option in the menu bar. Scroll down to “Node Commissioning” and left click on it. The following screen will appear:

![Node Commissioning window]
3. Left click “Browse” to open the “Device Selection” window. In this window, the user can choose what network they want to browse and what device address they want to change.

4. Check the “I want to input the address for the device on the selected network” box. The window will look similar to the following. Left click the “+” to see a listing of all the nodes on the 1770-KFD-1 network. Type the node address of the node you would like to change in the “Address” drop box and left click “OK”. Make sure that the “1770-KFD-1, DeviceNet” network is highlighted. If the node itself is highlighted, then the “OK” button will be grayed out and the user will not be able to change the node address.
5. The “Node Commissioning” window will reappear and the options at the bottom will now be configurable. Change the address to the desired value and left click “Apply”.

6. A message saying, “Node XX was successfully commissioned”, will appear. The address is now changed to the desired value. Left click “Close” to exit out of this window.

7. You have successfully changed the address of a node using the RSNetworx software.
This section will discuss how to start writing DeviceLogix programs in RSNetworx. A user can write a program either when offline or online with a Numatics’ G2-2 DeviceLogix manifold. This section will assume that the user is offline.

1. To program a Numatics’ G2-2 DeviceLogix manifold, the user must first open the program, “RSNetworx™ for DeviceNet”. A screen will appear that looks similar to this:

2. This is the screen where the user can configure a DeviceNet network. To place a manifold on the DeviceNet network, click on the “Numatics Inc.” folder listed under vendors. If this folder is not present, please download and install (register) the correct EDS file off of our website, [www.numatics.com/fieldbus](http://www.numatics.com/fieldbus). Once the EDS file has been installed (registered), click on the folder labeled “Pneumatic Valves” and then click and drag “Numatics G2-2 DL” to place it on the line that represents the trunk of the network. (Note: More information on installing EDS files is located in Section 5.)
3. To edit DeviceLogix programs, right click on the Numatic’s G2-2 DeviceLogix manifold icon that you would like to configure and click on “Properties”.

4. Find the DeviceLogix tab and click on it. The following window will appear.
5. Left click on the Start Logic Editor and choose either the “Function Block Editor” or the “Ladder Editor”. (Note: This option only appears with RSNetworx for DeviceNet version 6.00 and later. If a version earlier then RSNetworx for DeviceNet 6.00 is used, the software will automatically open the function block editor.)

6. An editor window will now open. The “Function Block Editor” window is shown on the left and the “Ladder Editor” window is shown on the right.

7. The Logic Editor screens can be seen in the above pictures. This is where the user can make and edit a program depending upon programming preferences.
8. To edit the program, left click on the “Edit” button in the tool bar (It looks like a lock). You will be asked if you want to edit the program. Left click “OK” and the editing toolbar will appear on the top of the screen.

9. Once done editing the program, left click “Edit” in the tool bar to exit the edit mode. Also remember to check your logic by using the “Logic Verify” Button (Looks like a piece of paper with a green check mark). This will verify that the program has no missing connections. Also, enable the logic by clicking on the down arrow near the drop box in the upper right hand corner of the screen. Scroll down to “Logic Enable On” to enable the logic.

10. Once edited, save the program. To save a program, exit out of the logic editor by left clicking the small “x” located at the top right of the window. A save window will pop-up. Left click “OK” to close it.
11. Next, in the “Numatics G2-2 DL” window, left click “Apply”, and then “OK” to exit this window. (CAUTION: REMEMBER TO CLICK “APPLY” BEFORE CLICKING OK. If not done correctly, the user may lose their program.)

12. Once in the RSNetworx main window, left click “File”, scroll down to “Save As”, and left click it. Name the file and left click “Save”. The program is now saved as a “.dnt” file. Exit out of RSNetworx by left clicking the “x” located at the top right of the window.

13. Your DeviceLogix program is now saved.
11) Downloading a Program into a Node

This section will discuss how to download a finished DeviceLogix program into a Numatics’ G2-2 DeviceLogix manifold.

1. **Requires initial/quick hardware setup to work.** First, open RSNetworx for DeviceNet by going to “All Programs” in the start menu of windows. Then go to the “Rockwell Software” tab. Next go the RSNetworx tab. Finally, left click on “RSNetworx for DeviceNet”. The following window will appear:

![RSNetworx window](image)

2. Open up your saved DeviceNet program that you want to load into the Numatics’ G2-2 DeviceLogix manifold. To do this, left click on “File” in the tools menu, scroll down to “Open”, and left click on it. The following window will open. Highlight the program you would like to load into your Numatics’ G2-2 DeviceLogix Manifold and click “Open”. This will open the DeviceNet file.

![File operations window](image)
3. With the DeviceNet file opened, left click on “Network” in the tools menu, scroll down to “Online”, and left click on it. Make sure that both the software representation of the Numatics Manifold and the actual Numatics Manifold have the EXACT same address. A small “≠” symbol may appear above the manifold. This means that the manifold in the software is not equal to the physical manifold. (Note: If the software IS NOT running in Demo mode, then the user would also be able to see the RS 232 1770-KFD module on the network).

4. Double left click the manifold icon and the following window will appear. Once again this tells us that the manifolds are not equal to each other. Left click “OK”.

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6. The program will then ask you if you would like to “Upload”, “Download”, or “Cancel”. Choose “DOWNLOAD” to download your program into the manifold. (CAUTION: IF UPLOAD IS CHOSEN, THEN THE CURRENT PROGRAM IN THE SOFTWARE WILL BE OVERWRITTEN BY THE PROGRAM IN THE MANIFOLD.)

7. The program will download into the manifold and the “Device Parameters” screen will be shown. Next, upload the manifold parameters. Do this by selecting “All” in the On-Line area and left clicking “Upload from Device”. This will give you the manifold configuration. Check and make sure that Slots 1-6 are the same on the screen as they are on the actual manifold.
8. If the Numatics G2-2 DeviceLogix manifold will be used in stand-alone mode (Not on a DeviceNet network), scroll down to the bottom of the device parameter window. You will see a parameter called “Network Status Override” and “Communication Status Override”. Enable both of these parameters by left clicking “Disabled” and selecting “Enabled”. Left click “Download” to download these new parameters into the manifold. (Note: Please see the Numatics DeviceLogix Quick Start Manual for further information about the “Network Status Override” and “Communication Status Override” parameters.)

9. The Numatics G2-2 DeviceLogix manifold now has the correct parameters. Now it is time to edit and enable your program. To start this process, left click on the DeviceLogix tab.
10. Left click “Start Logic Editor” to open up a Logic Editor screen.

11. To edit the program, left click on the “Edit” button in the tool bar (It looks like a lock). The program will ask you if you want to edit the program. Left click “OK” and the editing toolbar will appear on the top of the screen.

12. Once done editing the program, left click “Edit” in the tool bar to exit the edit mode. Also remember to check your logic by using the “Logic Verify” Button (Looks like a piece of paper with a green check mark). This will make sure that the program has no missing connections. Also, enable the logic by clicking on the down arrow near the drop box in the upper right hand corner of the screen. Scroll down to “Logic Enable On” to enable the logic.
13. Download the newly edited program into the manifold by using the drop box located in the tool bar (Top middle of the function block editor window pictured below). Left click the arrow pointing down, scroll down to “Download”, and left click it. The program will now download into the manifold and the following window will appear. Left click “OK” to close this window.

14. Once the program is downloaded, save the program. To save a program, exit out of the logic editor by left clicking the small “x” located at the top right of the window. A save window will pop-up. Left click “OK” to close it.

15. Next, in the “Numatics G2-2 DL” window, left click “Apply”, and then “OK” to exit this window. (CAUTION: REMEMBER TO LEFT CLICK “APPLY” BEFORE LEFT CLICKING “OK”. If not done correctly, the user may lose their program.)
16. Once in the RSNetworx main window, left click “File”, scroll down to “Save As”, and left click it. Name the file and left click “Save”. The program is now saved as a “.dnt” file. Exit out of RSNetworx by left clicking the “x” located at the top right of the window.
12) Troubleshooting Guide

This section will discuss the errors that can occur in the system and the solutions to these errors. The symptoms are first listed, followed by the possible cause(s), and finally the solution(s) are given.

RS 232 1770-KFD/1784 PCD PCMCIA Card Troubleshooting

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No LEDs on RS 232 1770-KFD Module</td>
<td>-RS 232 1770-KFD module switch in the “OFF” position</td>
<td>-Toggle switch to the “ON” position</td>
</tr>
<tr>
<td></td>
<td>-No bus power</td>
<td>-Check if AC adapter is plugged in and receiving voltage from a 110/120 VAC source.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Check if 5-pin Female MINI DeviceNet cable has +24VDC on the correct pins. See Section 1 for more details.</td>
</tr>
<tr>
<td>RS 232 1770-KFD LED will not flash when attempting to communicate with node</td>
<td>-Drivers not installed</td>
<td>-Make sure that the RS 232 KFD-1770 module has the drivers installed and is running in RSLinx.</td>
</tr>
<tr>
<td></td>
<td>-Cable problems</td>
<td>-Check the cables and make sure everything is connected correctly.</td>
</tr>
<tr>
<td>USB to Serial Converter is not working</td>
<td>-Wrong converter for RS 232 1770-KFD module</td>
<td>-Make sure that the converter used does not require handshaking. Please see the “USB to Serial Installation and Configuration” Section of this manual.</td>
</tr>
<tr>
<td></td>
<td>-Wrong Communication port chosen</td>
<td>-Check to see if the correct Communication port is picked in the configuration window for the RS 232 1770-KFD module (See Section 6).</td>
</tr>
<tr>
<td></td>
<td>-USB to Serial Converter not installed correctly</td>
<td>-Check in the Device Manager in Windows that the converter is installed correctly (There will be an exclamation point next to the converter if it’s not installed correctly).</td>
</tr>
<tr>
<td>PCMCIA Card will not configure within RSLinx</td>
<td>-No terminating resistors used</td>
<td>-The PCMCIA Card needs two terminating resistors on the Network to work correctly.</td>
</tr>
<tr>
<td></td>
<td>-Drivers not installed properly</td>
<td>-Check the Device Manager in Windows to verify that the PCMCIA card is installed correctly (There will be an exclamation point next to the card if it’s not installed correctly).</td>
</tr>
</tbody>
</table>
# Numatics Manifold Troubleshooting

## Symptom | Possible Cause | Solution
--- | --- | ---
Will not go on-line. Network Status LED is Red & Module Status LED is Green | -Duplicate MAC ID (address) | -Change Mac ID (address) and cycle power. See Section 9 for more details.

Network Status LED off | -CAN_HI / CAN_LO Reversed -No Network Connected -Improper Baud Rate | -Reverse wiring for proper connection -Make sure the Network is properly connected. -Make sure that Autobaud is disabled on the manifold. -Check the baud rate in the RS 232 1770-KFD configuration window and see if it is correct.

Module LED Flashing Green | -Power not properly applied | -Power must be present between pin No. 2 and pin No. 3 on the communication connector for the node to function properly.

Module LED off | -No Aux. power | +24VDC must be present between pin No. 4 and pin No. 3 of the auxiliary power connector even if Discrete I/O modules are not installed

Fuse LEDs displays red | -Blown internal fuses | -Check for external shorts to Input connector from external sensor devices or cable and repair. Replace internal fuse. If problem persists contact factory.

Amber LED is flashing | -Logic is forced ON/OFF | -In the logic editor screen, the user is allowed to force inputs/outputs on. These appear in yellow on the screen.

Input Modules are not working | -Using wrong input type (NPN/PNP) | -Make sure that you have the correct module type for the input type being used (NPN/PNP).

The wrong valve solenoid coils are being energized. | -Z-Board™ type mismatch. Single Z-Board™ present where double Z-Board™ expected or vice versa. | -Check that correct Z-Board™ types are installed. Check that ribbon cable (output group No. 2) is connected to appropriate valve station.

Valve outputs do not energize. All node LEDs normal. | -Output power not present or connected in properly on Aux. Power connector. | -Check for 24VDC on pin No. 1 of Aux. Power connector of Comm. module. -Check for 24VDC on Pin No. 1 of 12mm local Aux. Power connector of 25 Pin Sub-D Discrete Output Module, if applicable
## RSNetworx/Program Troubleshooting

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manifold seems to communicate, but logic and valves will not turn on</td>
<td>-Communication Status Override and Network Status Override not enabled</td>
<td>-Go to the “Device Parameters” tab under the manifold properties (In RSNetworx) and enable the overrides.</td>
</tr>
<tr>
<td>Logic will not start within manifold</td>
<td>-Logic not enabled</td>
<td>-Make sure that the amber LED is ON. This means that the program is running. To enable the Logic, go to the drop down box in the logic editor screen and select, “Enable Logic”.</td>
</tr>
<tr>
<td></td>
<td>-Forces applied to inputs</td>
<td>-If the amber LED is blinking, inputs and outputs are being forced on. Make sure that these forces are not affecting the functionality of the program.</td>
</tr>
<tr>
<td>Logic will not download to node</td>
<td>-Program not verified</td>
<td>-A program needs to be complete to be downloaded into the manifold. Make sure that the program “Passes Verification” using the “Logic Verify” feature in the Logic Editor</td>
</tr>
<tr>
<td>Unable to communicate with Numatics G2-2 DeviceLogix manifold through RSNetworx but network status LED solid green.</td>
<td>-Demo version of the software.</td>
<td>-To see a Numatics' G2-2 Manifold in the RSNetworx software. Change the address of the manifold to a number in the range of 00-05 (See Section 9).</td>
</tr>
<tr>
<td>Orange lines appear in my program and it refuses to verify</td>
<td>-Feedback loops are being used</td>
<td>-The software gets confused when using feedback loops. To fix this problem, right click on the orange lines and choose the “Assume Data Available” option. This will make arrows appear at the input point on the line. These arrows mean that the value at that point is known at the beginning of the cycle.</td>
</tr>
</tbody>
</table>