

Initial Setup of the URCap Connection to the LMD

Novanta IMS Applications Note
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Summary

The purpose of this document is to provide step by step instructions for establishing the initial connection with the LMD using Novanta's Ethernet Interface. The instructions will also provide step by step instructions for adding the URCap to the UR environment.

Introduction

NOTE: Refer to the LMD's hardware manual for assistance with installation and wiring recommendations.

Recommended Part List:

The following components are required to interface the LMD with the UR Controller:

1. Liberty MDrive Integrated Stepper motor
 - NEMA 17 LMD (part number LMDXE42X or LMDXE42XC)
 - NEMA 23 LMD (part number LMDXE57X or LMDXE57XC)
 - NEMA 34 LMD (part number LMDXE85X or LMDXE85XC)
2. DC Power Supply – Please contact your local distributor or Novanta IMS applications department if assistance is needed to determine the appropriate input voltage for the application
 - 12-48 VDC power supply if using NEMA 17 LMD (part number LMDXE42X or LMDXE42XC)
 - 12-60 VDC power supply if using NEMA 23 LMD (part number LMDXE57X or LMDXE57XC)
 - 12-70 VDC power supply if using NEMA 34 LMD (part number LMDXE85X or LMDXE85XC)
3. Cat 5 or higher Ethernet cable
 - Quantity of required cables depends on required connection method. Refer to Appendix A and Appendix B on page 9 for connection diagrams.
4. Network Switch
 - Required for Network Switch connection method only. Number of ports depends on application requirements
5. LMD Software Suite (LSS) V1.1.0.0 or later, available for download from:
<https://novantaims.com/dloads/>

Initial LMD Configuration Process

For LMD ethernet devices with CyberSecurity enabled, perform the following steps for first time use.

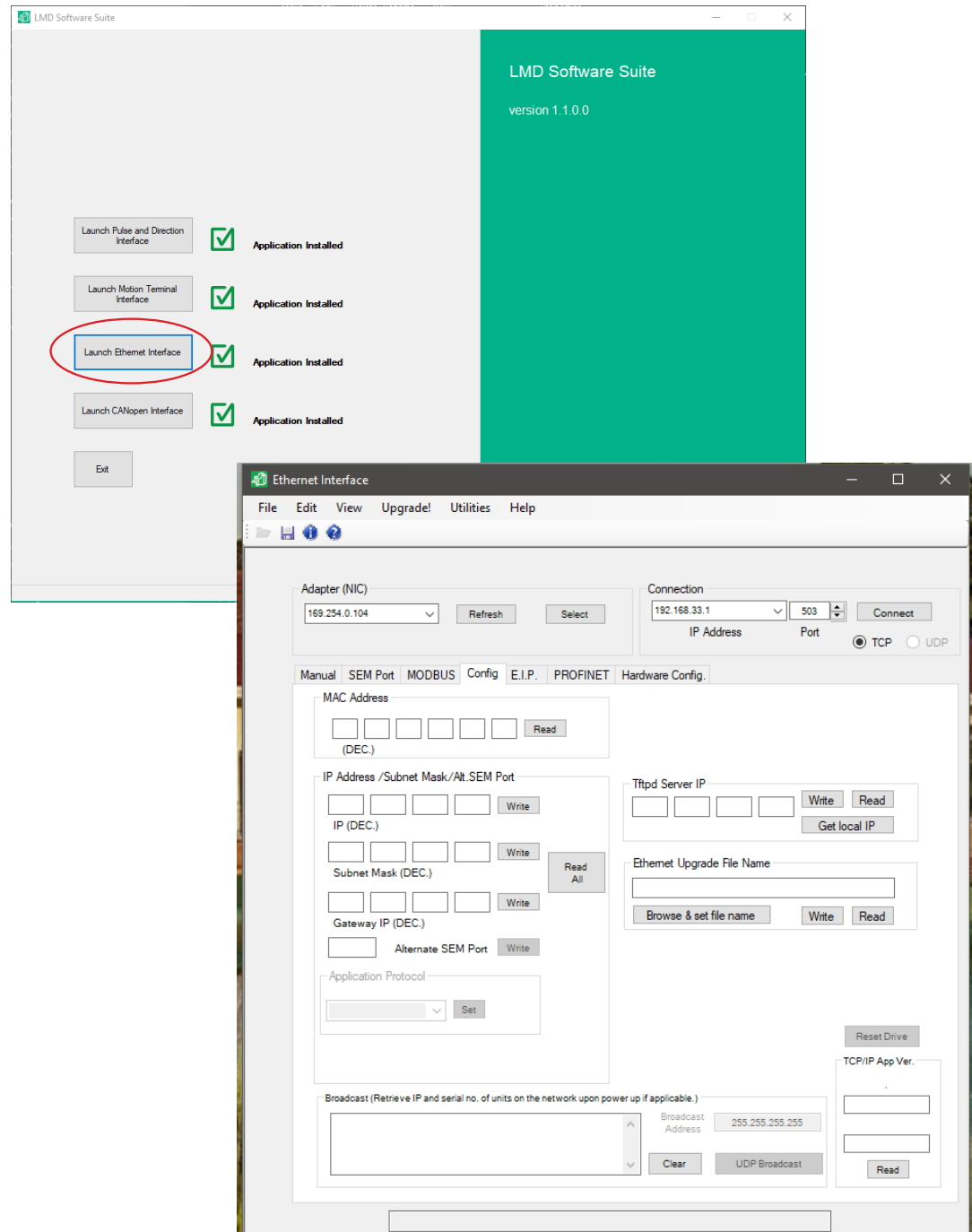
Step 1

Use the LMD Software Suite (LSS) desktop icon to launch version 1.1.0.0 of the LSS. The LSS launch screen will be displayed.



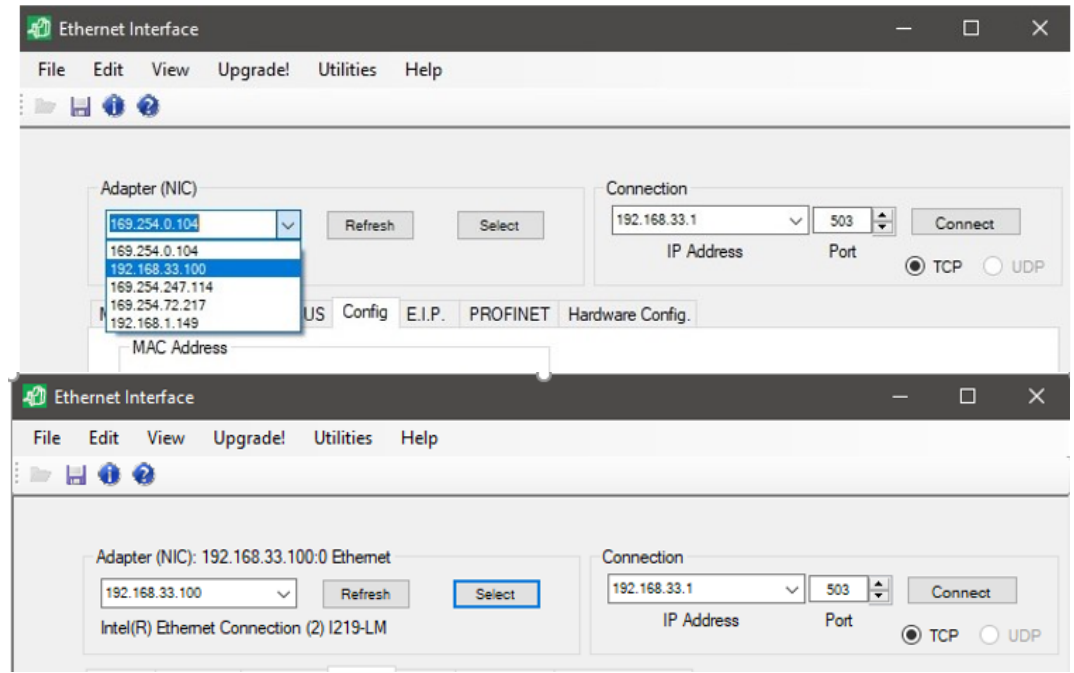
Step 2

On the launch screen, click the “Launch Ethernet Interface” button. The “Ethernet Interface” will be displayed.



Step 3

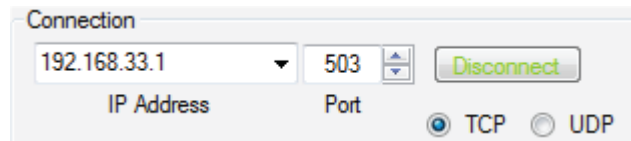
Select the Adapter (NIC) from the dropdown menu to which the LMD Ethernet device is interfaced with and click “Select”. For this example, 192.168.33.100 was used for the Adapter (NIC).



NOTE: The refresh button may be used if the associated NIC IP is not shown on the dropdown. Once selected, the NIC information will display above and below the selector as shown above.

Step 4

In the section labeled “Connection”, ensure that the default IP Address, 192.168.33.1 is visible in the dropdown box and 503 in the port field. Click the “Connect” button. Connection active status will be indicated by the button text turning green showing “Disconnect”, and the status bar showing a connected status.



192.168.33.100:49836 is connected to: 192.168.33.1:503

Step 5

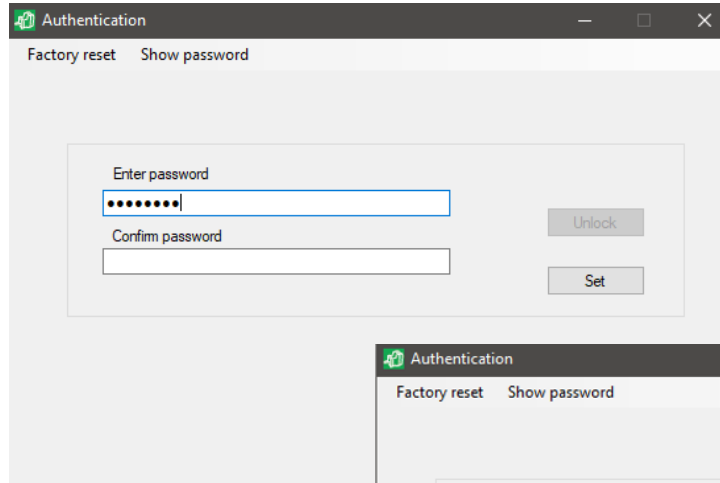
After clicking “Connect”, an Authentication screen will be displayed, allowing for a password to be setup. Enter a password in the first field of the Authentication dialog box.

Step 6

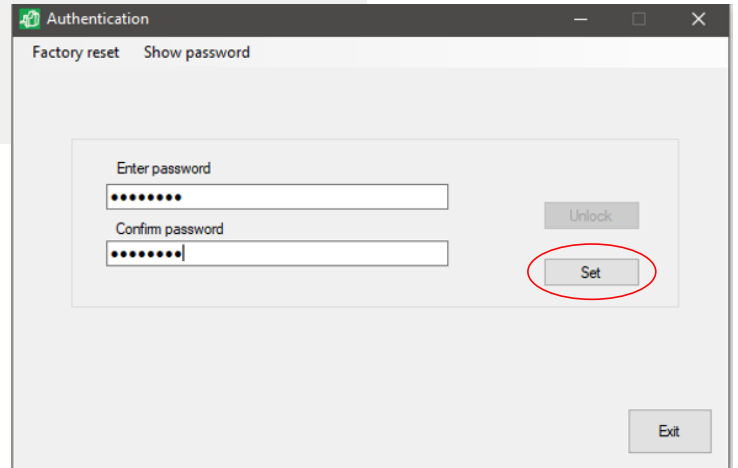
Enter the same password in the second field of the Authentication dialog box.

Step 7

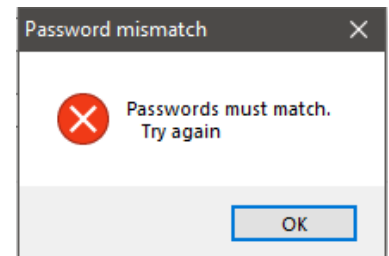
Click “Set”.



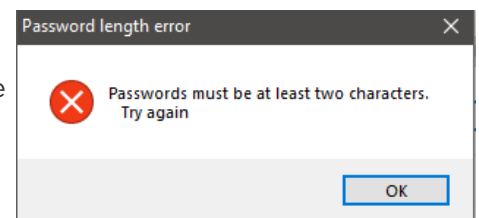
NOTE: The “Show password” option can be clicked to show the password as it is typed.



NOTE: If the passwords do not match, a message will be displayed indicating that the passwords do not match, and the passwords will have to be entered again.



NOTE: If the password does not meet the minimum two-character requirement, a message will be displayed indicating that the password is not a sufficient length. A new password will need to be entered to meet this requirement.



Step 8

After pressing the “Set” button, a connection to the device must be made. Press the “Connect” button. You will be prompted to enter the newly created password.

Step 9

Enter the correct password and click the “Unlock” button. The interface will connect with the device and the Config. tab will be displayed.

Step 10

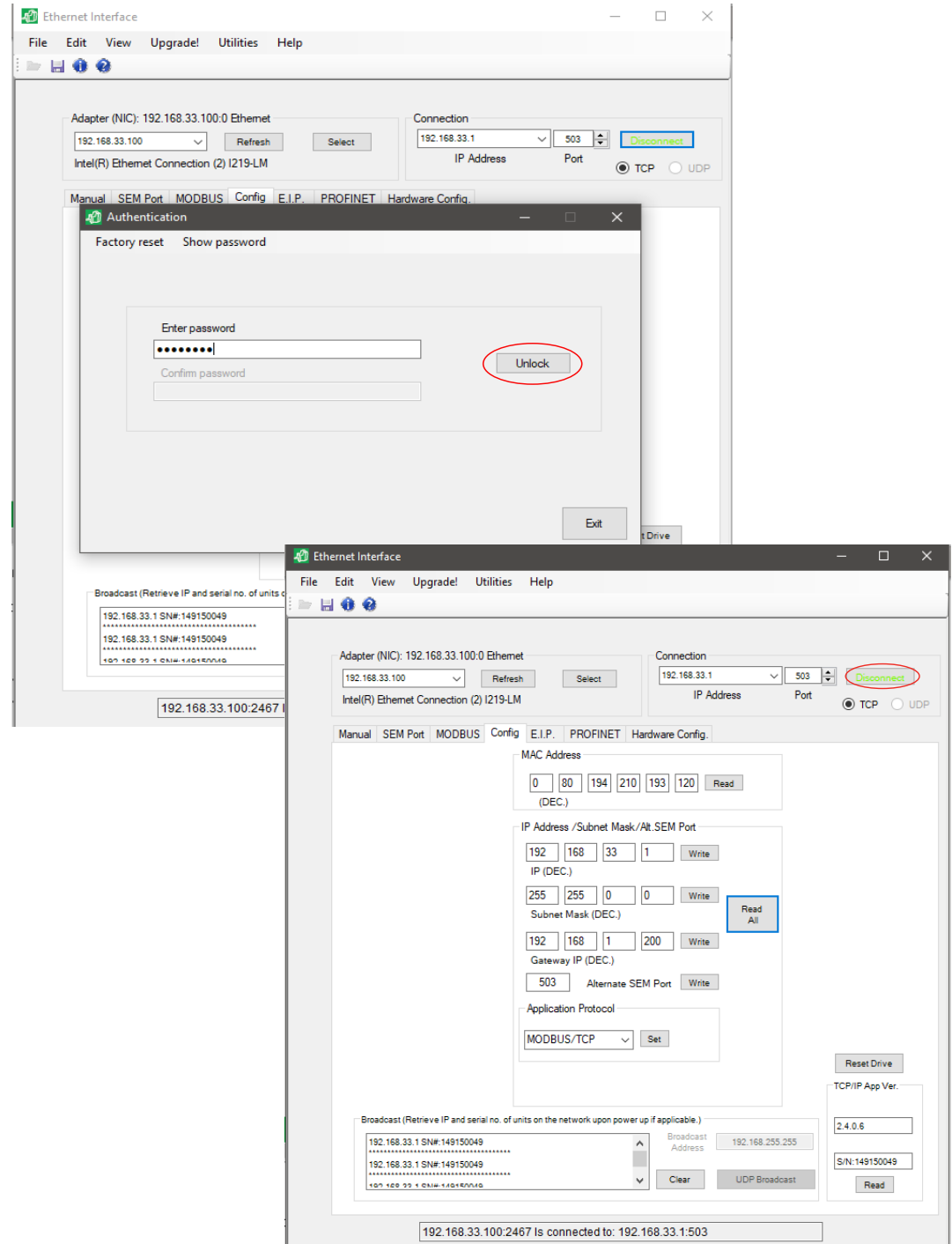
Modify the IP address as needed to satisfy the application requirements.

NOTES:

- The motor should have Echo Mode set to option two (2).
- URCap is not intended for use with motors set for Ethernet/IP or Profinet application protocols.

Step 11

After all necessary modifications have been made, press the “Disconnect” button.



If additional assistance is needed with IP address reset, please refer to the following information:
<https://novantaims.com/application-note/changing-liberty-mdrive-tcp-ip-parameters/>

NOTE: The default application protocol of Modbus/TCP should be used to interface with the UR Cap. It is recommended to configure the devices echo mode for echo mode two (2). For additional information related to echo mode configuration, please refer to the MCode programming and reference manual:
<https://novantaims.com/dloads/product-literature/manuals-3/>

Interfacing LMD with UR controller

The following process shows how to interface the LMD with the UR Controller.

To interface the LMD with the URCap, download the latest version from:

NEED URL FOR URCap DOWNLOAD

Before performing the following steps, determine which connection method will be used within the application.

If using direct connection, refer to “Appendix A – Direct Connection” on page 9 for necessary equipment and instructions.

If using a Network Switch, refer to “Appendix B – Network Switch Connection (Recommended method)” on page 9 for necessary equipment and instructions.

If additional information is needed on configuring a local area network connection, refer to the following Application Note:

<https://novantaims.com/application-note/setting-ethernet-adapter-mdrive-ethernet-tcp-ip-products/>

Step 1

Insert the USB flash drive into the UR Controller.

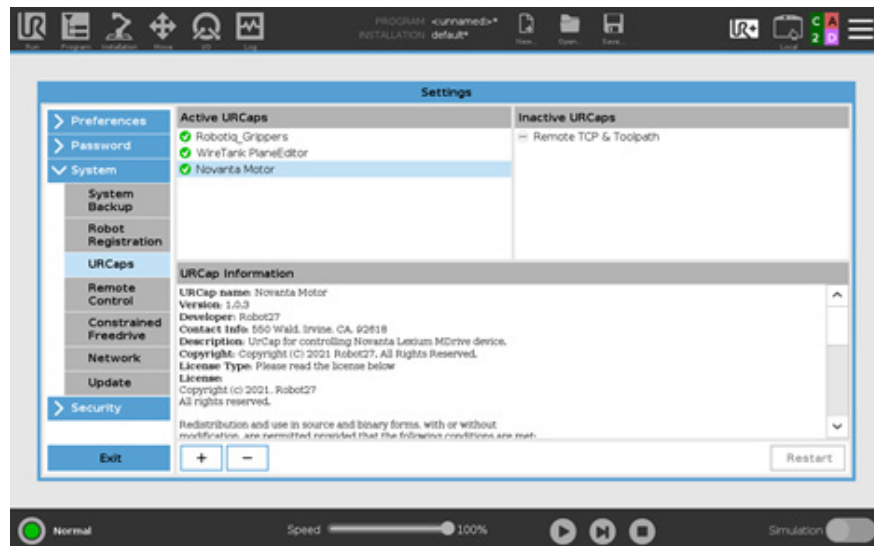
Step 2

Tap the  icon in the top right corner of the PolyScope heading bar and select Settings.

The Settings menu will be displayed.

Step 3

On the Settings option menu located on the left of the screen, select System > UR Caps and press the (+) sign to expand the menu.



Step 4

Select the Novanta Motor from USB Flash drive, displayed in the Active URCaps window to install it.

If properly installed, the Novanta Motor will appear in the URCap Information tab, located under the Active URCaps window.

NOTE: Refer to the UR System manual for additional information related to URCap installation.

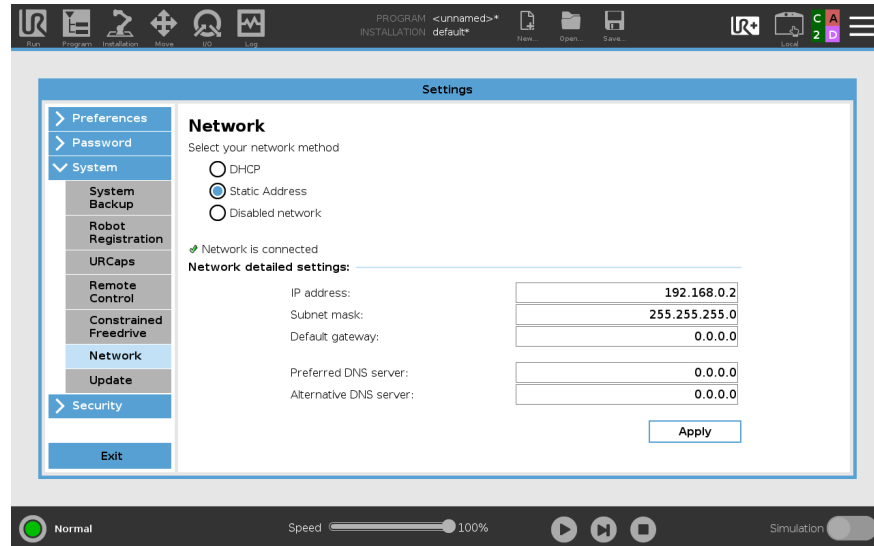
Step 5

After installing the Novanta Motor UR CAP, press the Restart button on the bottom right of the screen to restart the UR controller.

Step 6

On the Settings option menu located on the left of the screen, select System > Network. This will display the current Network setting.

Take note of these settings. They will be used in the following configuration steps.



NOTE: Refer to the UR System manual for additional information related to network configuration.

Step 7

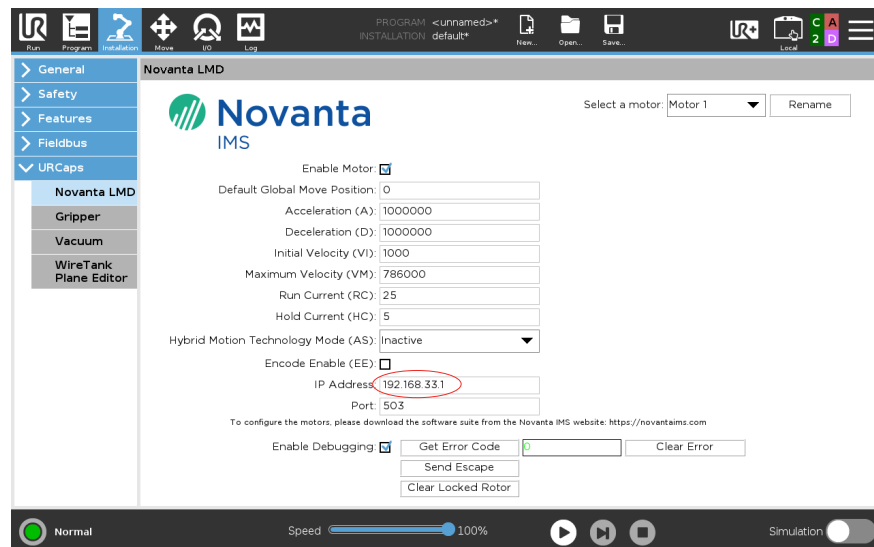
On the PolyScope heading bar, select Installation.

Step 8

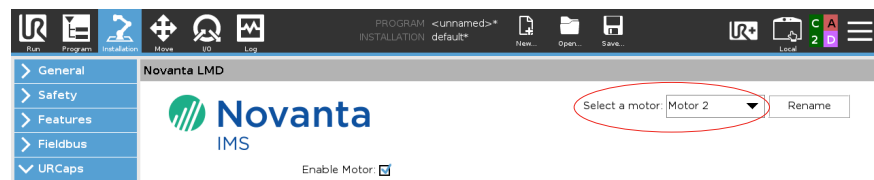
On the Installation Options menu located on the left of the screen, select URCaps > Novanta LMD.

Step 9

Enter the current IP address indicated in Network Settings (refer to Step 6) into the IP address field of the Novanta LMD URCap. The LMD URCap utilizes the default port and protocol configurations.



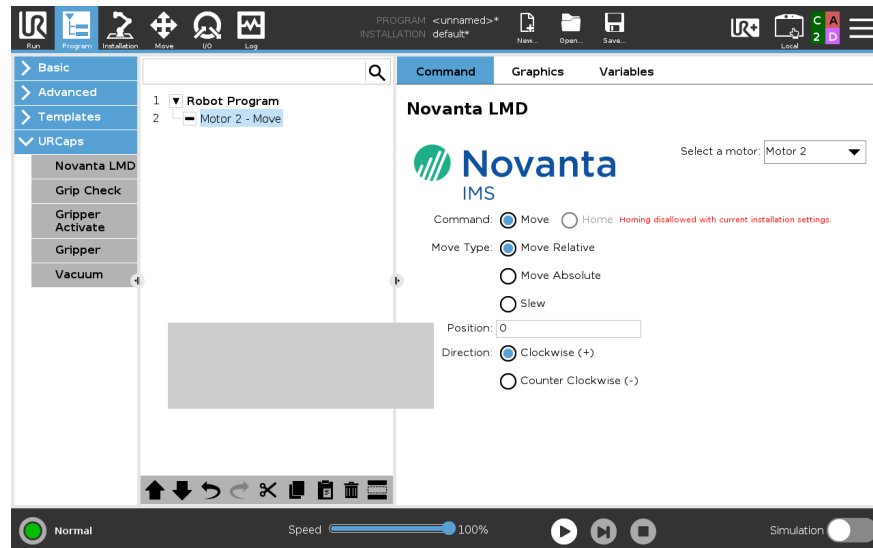
NOTE: If there is more than one motor assigned to the URCap, other motors are selectable through the “Select a motor” drop down menu.



Step 10

From the Program option of the PolyScope Heading bar, press the URCaps option to expand the menu and navigate to Novanta LMD UR Program node.

Use this screen to exercise the device via the absolute, relative, and move of constant velocity commands.



NOTE: For additional information on MCode commands, refer to the LMD MCode Programming and Reference manual, available for download from: <https://novantaims.com/downloads/>

Appendix A – Direct Connection

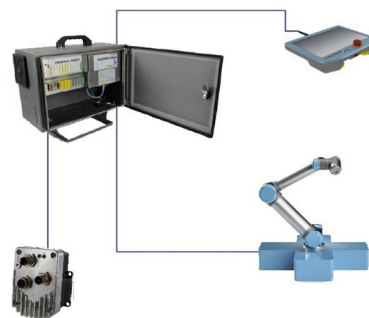
1. Connect LMD to UR Controller:

Use a Cat 5 or higher Ethernet cable to connect P3 connector of the LMD to the UR controller:

LMD Pluggable Model: Use an RJ45 cable for communication

LMD M12 Circular Model: Use an M12 Male to RJ45 cable for communication

The graphics below display a basic direct connection setup for the Pluggable and M12 connector models of the LMD.



Appendix B – Network Switch Connection (Recommended method)

1. Connect to Network Switch:

Use a Cat 5 or higher Ethernet cable to connect P3 connector of the LMD to the Network Switch:

LMD Pluggable Model: Use an RJ45 cable for communication

LMD M12 Circular Model: Use an M12 Male to RJ45 cable for communication

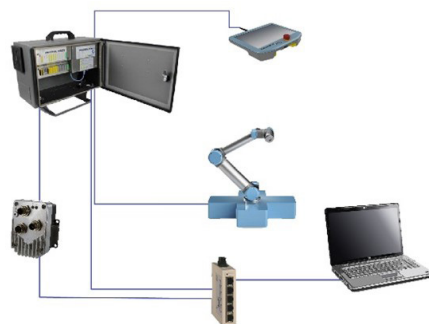
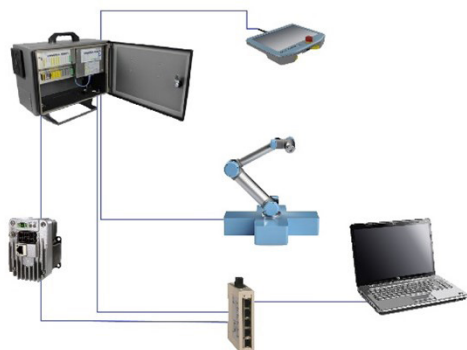
2. Connect UR Controller to Network Switch:

Use a Cat 5 or higher Ethernet cable to connect the UR controller to the Network switch referenced in Step 1.

3. Connect to the Local Area Network (LAN):

Connect the Network switch to the Local Network to be used for the application to support parameter modification, troubleshooting, etc.

The graphics below display a basic network connection setup for the Pluggable and M12 connector models of the LMD.



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