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DAQs Quick Start Guide

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1 Introduction

DAQs is a Windows® computer app designed to communicate with the Advanced List Mode Module (ALMM), MC-15, and instrumentation based off these platforms. The ALMM communicates with DAQS over the Ethernet using TCP/IP. If you register the IPv4 address of the ALMM on the local network the ALMM can be operated remotely. However, if the ALMM is not connected to the local network then the computer running DAQs will need to be connected directly to the ALMM or an additional Ethernet adapter will need to be installed on the acquisition computer.

The IPv4 address can be changed in the rei.ini file located on the µSD card. Please see the appendices for more information on the rei.ini file.

This document is intended to be a quick start guide on how to get an ALMM connected to a computer and how to start a data acquisition. DAQs has much more capability than is presented in this document.

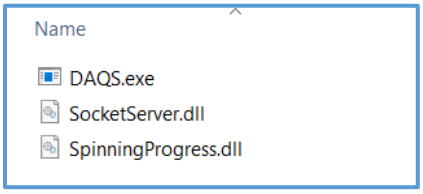
2 Instructions

2.1 Cable Connection

Connect an Ethernet cable from your computer to the ALMM / MC-15.

2.2 Starting DAQs

DAQs requires two dynamic linked libraries to be in the same file location as the executable (DAQs.exe). These are SocketServer.dll and SpinningProgress.dll.

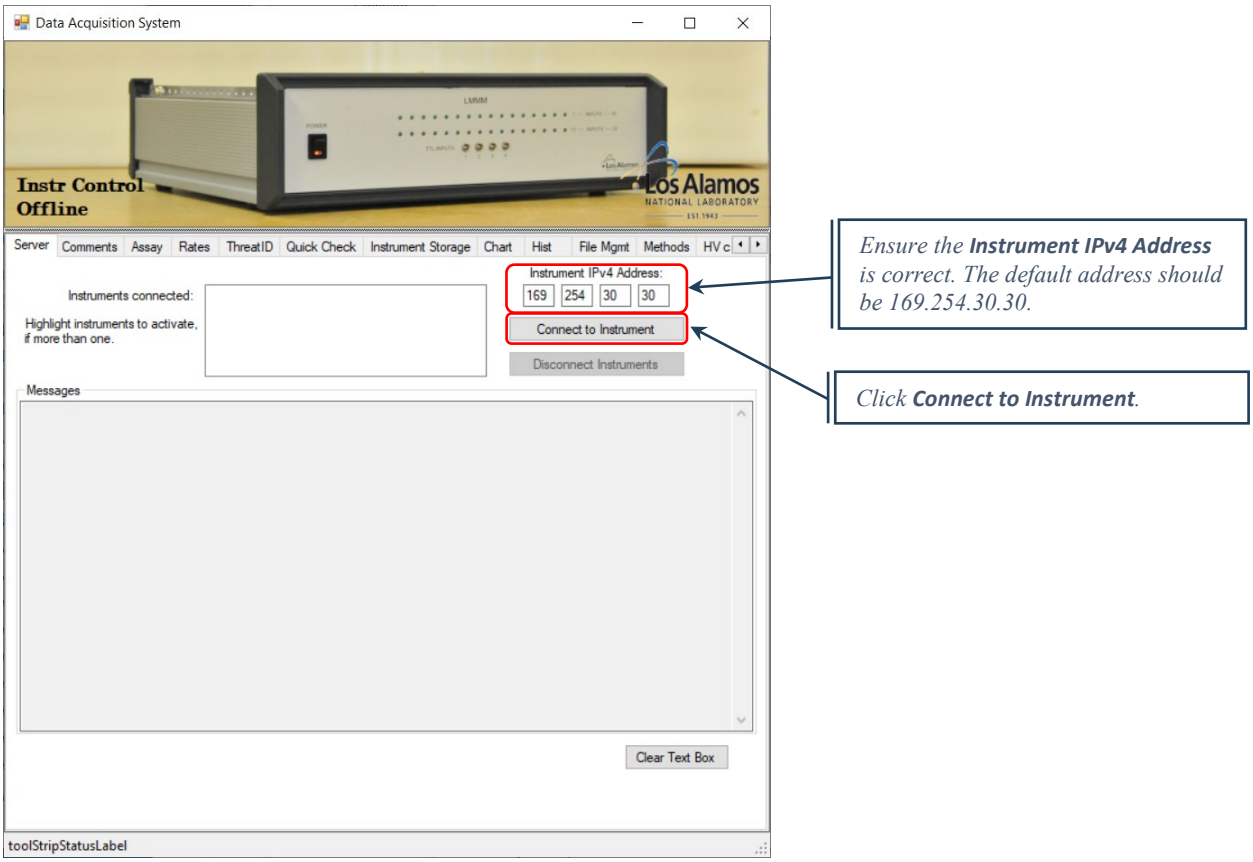


Double click on DAQS.exe to start the program.

The initial screen of DAQs.

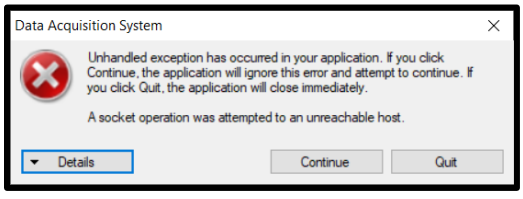
2.3 Connecting to the ALMM / MC-15

- Ensure the **Instrument IPv4 Address** is correct. The default address should be 169.254.30.30.
- Click **Connect to Instrument**.



2.3.1 *Errors*

If an **Unhandled exception** is encountered while attempting to connect to an instrument this is because a connection could not be made.

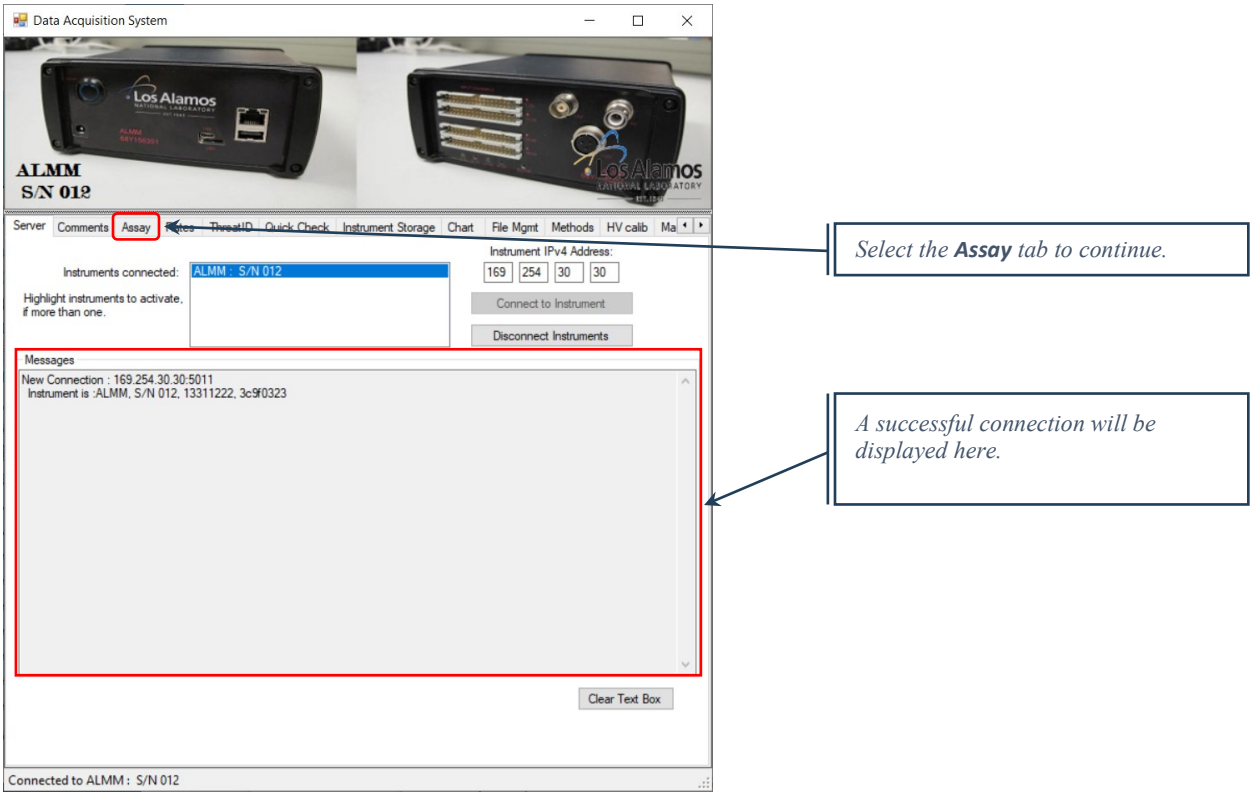


Please see Appendix A: Ethernet Connection Errors. for more information.

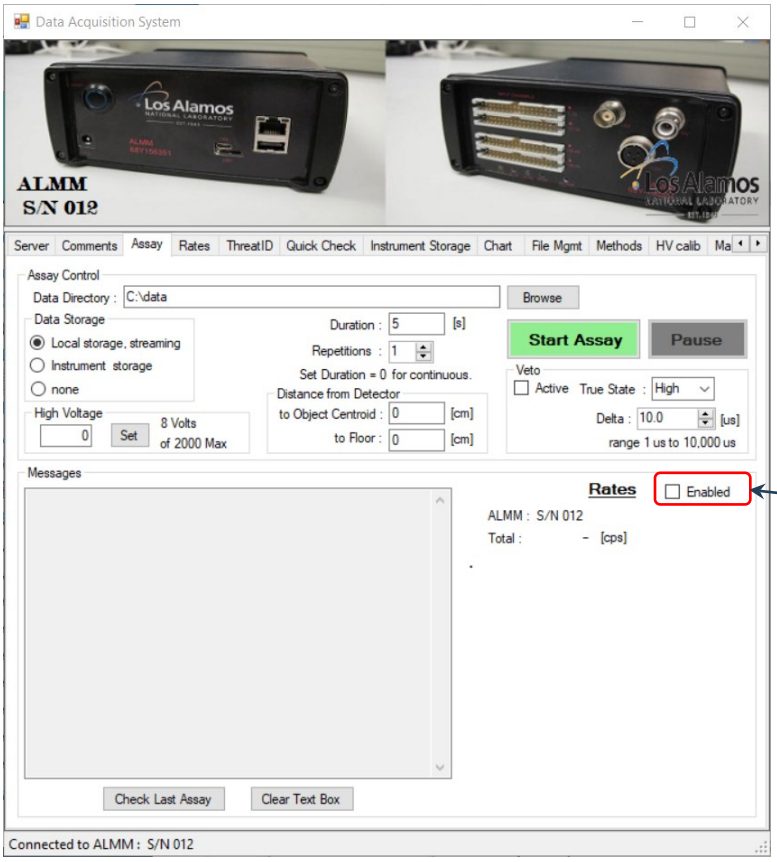
2.4 Checking the status of the ALMM

- This will change the header graphics to the instrument type you are connected to and will display a new connection in the **Messages** textbox.

- Select the **Assay** tab.



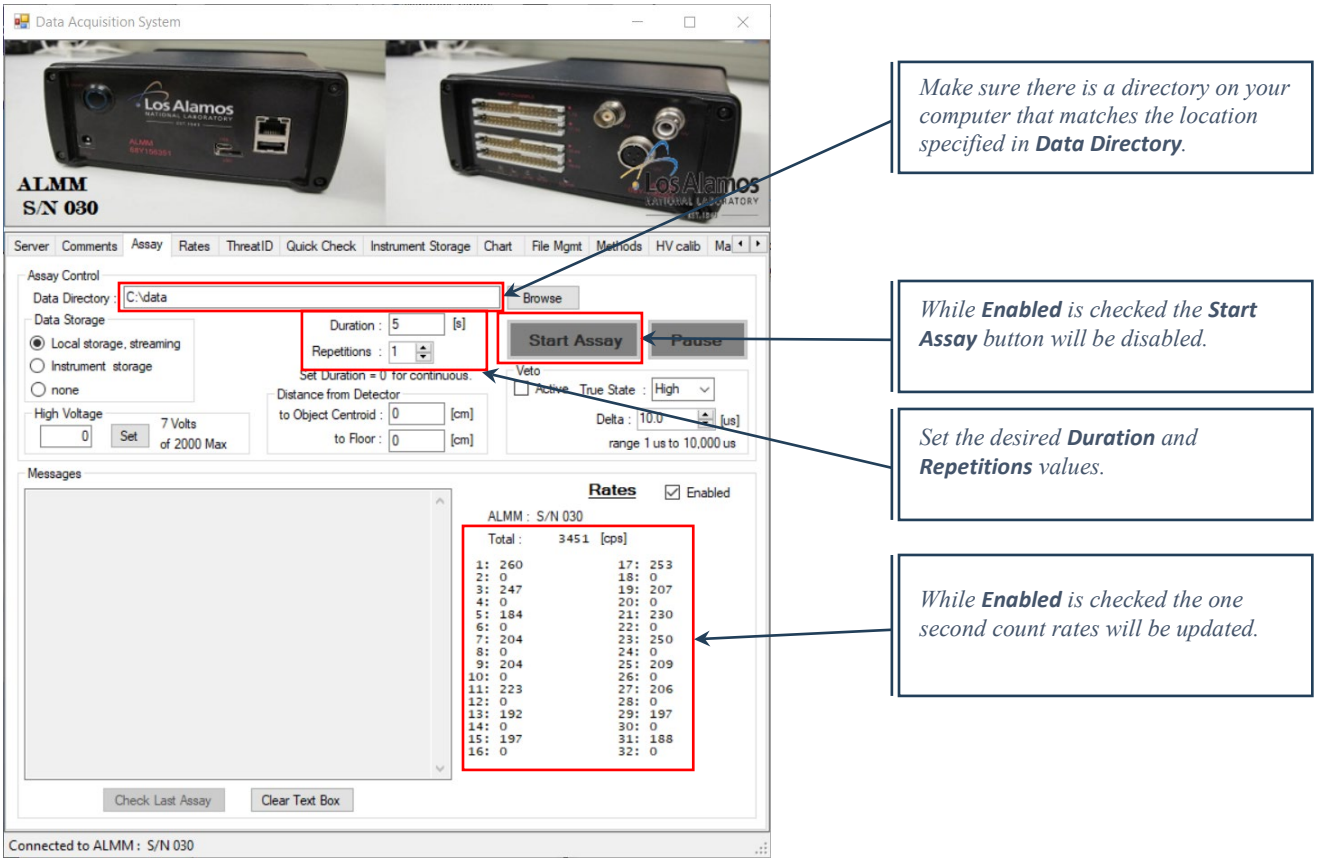
- Select the rates **Enabled** checkbox to see if the unit is receiving inputs.



*Select **Enabled** to see the one second count rates.*

- You should see the one-second rates for the channels that are receiving counts.
- Ensure that on your computer that you have premade the data directory. E.g. in this case you will need to have made a C:\data\ directory. This is where the files will be saved.
- Set the duration and repetition to the desired values. The defaults are **Duration** = 5 seconds and **Repetitions** = 1.

Note: While the **Enabled** checkbox is checked you cannot take data. You will need to uncheck the **Enabled** checkbox to take data.



*Make sure there is a directory on your computer that matches the location specified in **Data Directory**.*

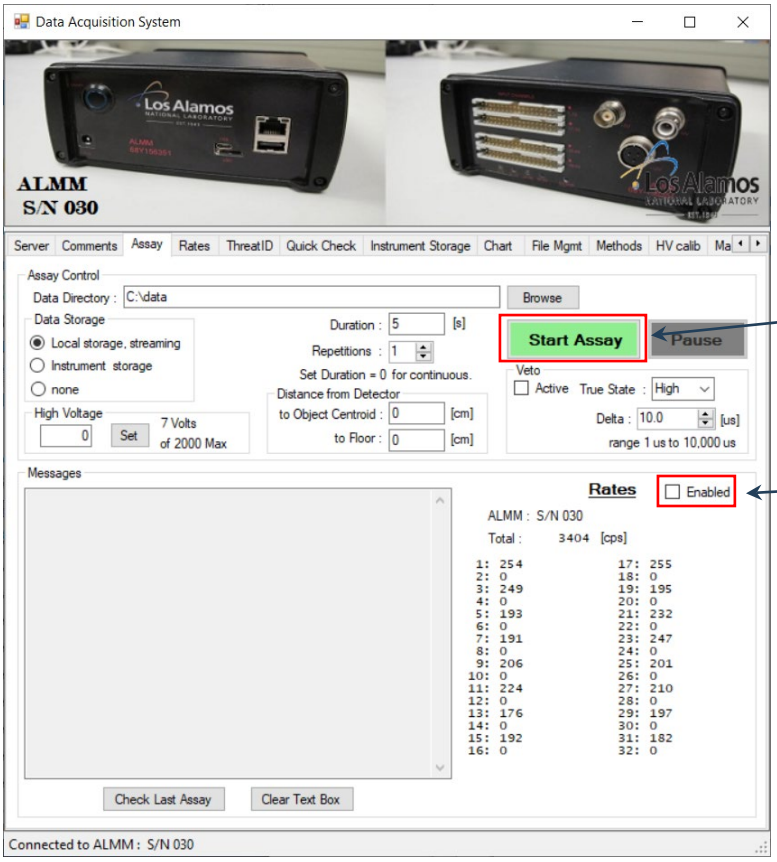
*While **Enabled** is checked the **Start Assay** button will be disabled.*

*Set the desired **Duration** and **Repetitions** values.*

*While **Enabled** is checked the one second count rates will be updated.*

2.5 Start a Run

Ensure the rates **Enabled** checkbox is unchecked and then click on **Start Assay**.



*Press **Start Assay**.*

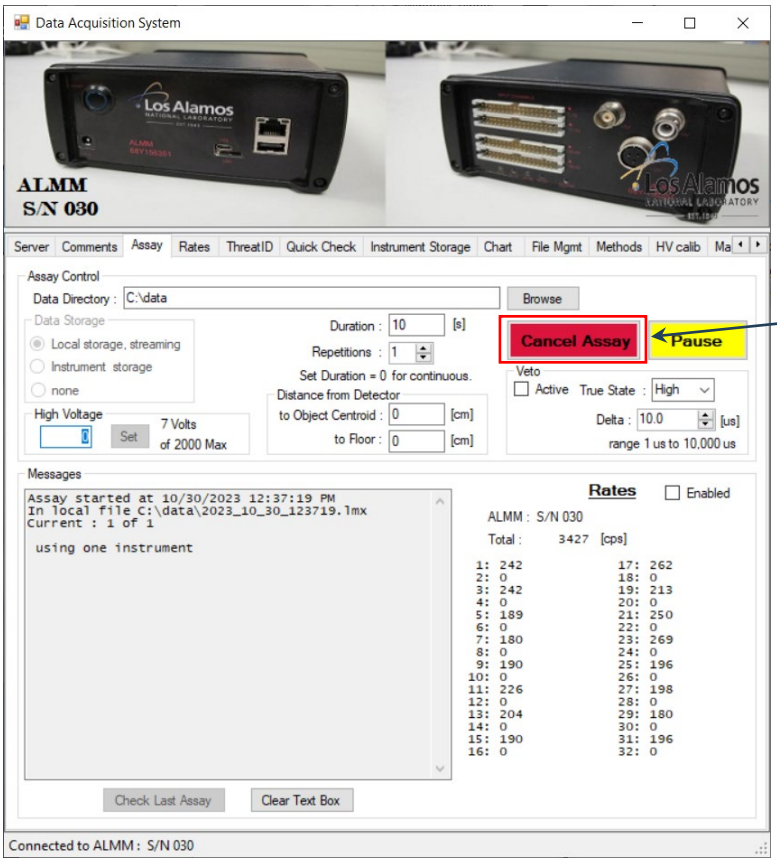
***Start Assay** is only enabled when the rates **Enabled** is unchecked.*

*Uncheck **Enabled**.*

*An assay can only be started when **Enabled** is unchecked.*

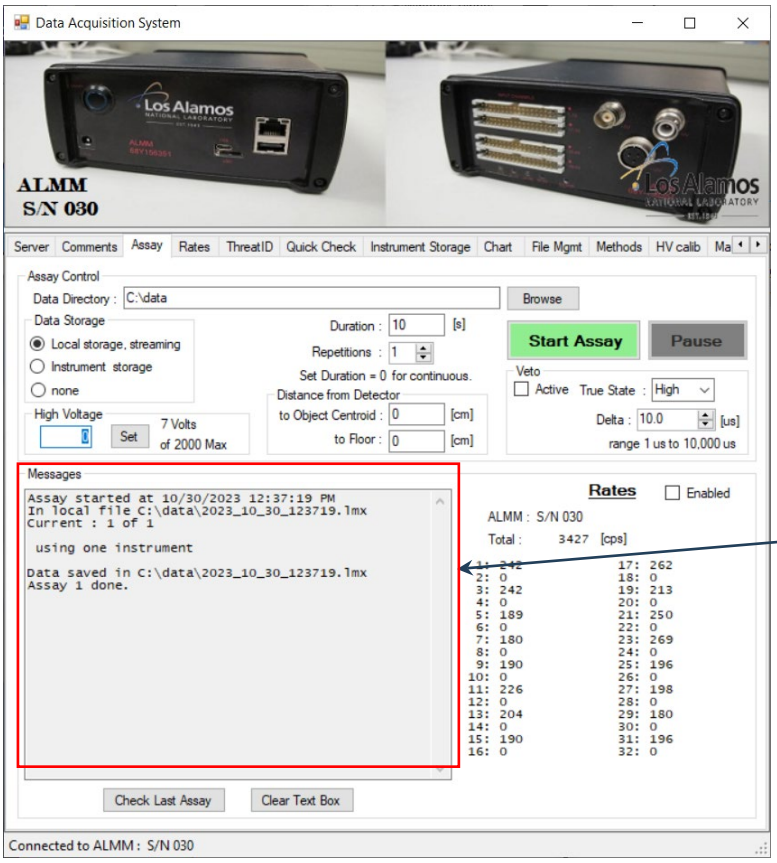
This will start the collection and the data will be saved to the **Data Directory** (C:\data).

While running an assay can be cancelled.



An assay can be cancelled while an acquisition is ongoing.

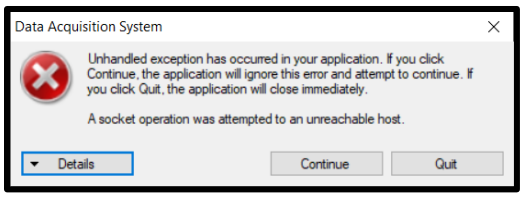
Upon completion the **Messages** textbox will be updated with information about the run.



*Information about the assay can be found in the **Messages** text box.*

Appendix A Ethernet Connection Errors.

If you get an **Unhandled exception** when **Connect to Instrument** is clicked this is because a connection could not be made.

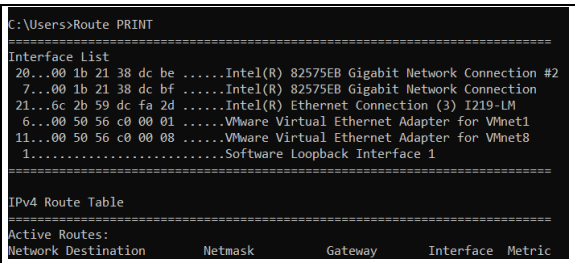


Possible reasons / solutions.

Incorrect IPv4 address.	Pull the µSD card from the ALMM and check the rei.ini file. Make sure the ip_addr is set to your desired value. The default is 169.254.30.30. Make sure the server_port value is 5011. See Appendix B for an example rei.ini file.
	
	WARNING: Do not scan or try to fix the µSD card when it's placed into a windows computer. This will corrupt the file structure and make the µSD card unusable.
	
	`ip_addr = "169.254.30.30"`
	`server_port = 5011`

Your Ethernet configuration is not setup correctly.	Make sure you can ping the unit. This is done in a cmd prompt by typing ping <IPv4 address>
	e.g.
	`> ping 169.254.30.30`
	You should see similar results.
	`C:\Users>ping 169.254.30.30`
	
	`Pinging 169.254.30.30 with 32 bytes of data:`
	`Reply from 169.254.30.30: bytes=32 time<1ms TTL=64`
	`Reply from 169.254.30.30: bytes=32 time<1ms TTL=64`
	`Reply from 169.254.30.30: bytes=32 time<1ms TTL=64`
	`Reply from 169.254.30.30: bytes=32 time<1ms TTL=64`
	
	`Ping statistics for 169.254.30.30:`
	`Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),`
	`Approximate round trip times in milli-seconds:`
	`Minimum = 0ms, Maximum = 0ms, Average = 0ms`
	
	`C:\Users>`

Disconnect from the internet and have a direct connection to the ALMM.	The Ethernet setup may automatically send all Ethernet traffic to your servers. This may cause all your requests to the ALMM to go to your local network first, which may not reach the connected ALMM. One method is to disconnect the acquisition computer from the network and have a direct Ethernet connection to the ALMM.
Add another Ethernet adapter.	If not having a single connection to the ALMM is desirable, a second Ethernet adapter can be added to your computer. You may need to change your IP Routing Table to ensure that the ALMMs ip route goes through the correct Ethernet port. You will need to use the command "route" from the command prompt. To look at the current routing table type "Route PRINT" on the command prompt.

	 For information on how to configure and Ethernet adapter please see https://learn.microsoft.com/en-us/windows-server/administration/windows-commands/route_ws2008
Register the ALMMs IPv4 address with your network administrator.	The ALMM uses TCP/IP to communicate with DAQs. You can register an IPv4 address with your network administrator and then connect DAQs to your local network. This will allow you to connect to the ALMM over your network and allow for truly remote operations.

Appendix B Example rei.ini file.

This file is found on the µSD card on the ALMM.

WARNING: Do not scan or try to fix the µSD card when it's placed into a windows computer. This will corrupt the file structure and make the µSD card unusable.

```
#
# REI Configuration file
#
[Instrument]                ; pertaining to overall instrument
type            = 6         ; 5=MC-15 6=ALMM
type_name       = "ALMM"
hw_version      = "001"
name            = "S/N 030"
ip_addr         = "169.254.30.30”
mac_addr        = "00:0a:35:00:26:1e"
server_port     = 5011
state           = 1         ; 1 server, 2 local mode, 3 test mode
HV              = 0
HV_MAX          = 2000
HV_WR_CONV      = 1.95
HV_RD_CONV      = 2.0
verbose         = 1         ; 0=quiet 1=talky
storage         = 1         ; 0=none 1=net 2=usb 3=lfs
[LMC]
duration        = 5         ; default time to take assay in seconds
show_channels   = 0
```