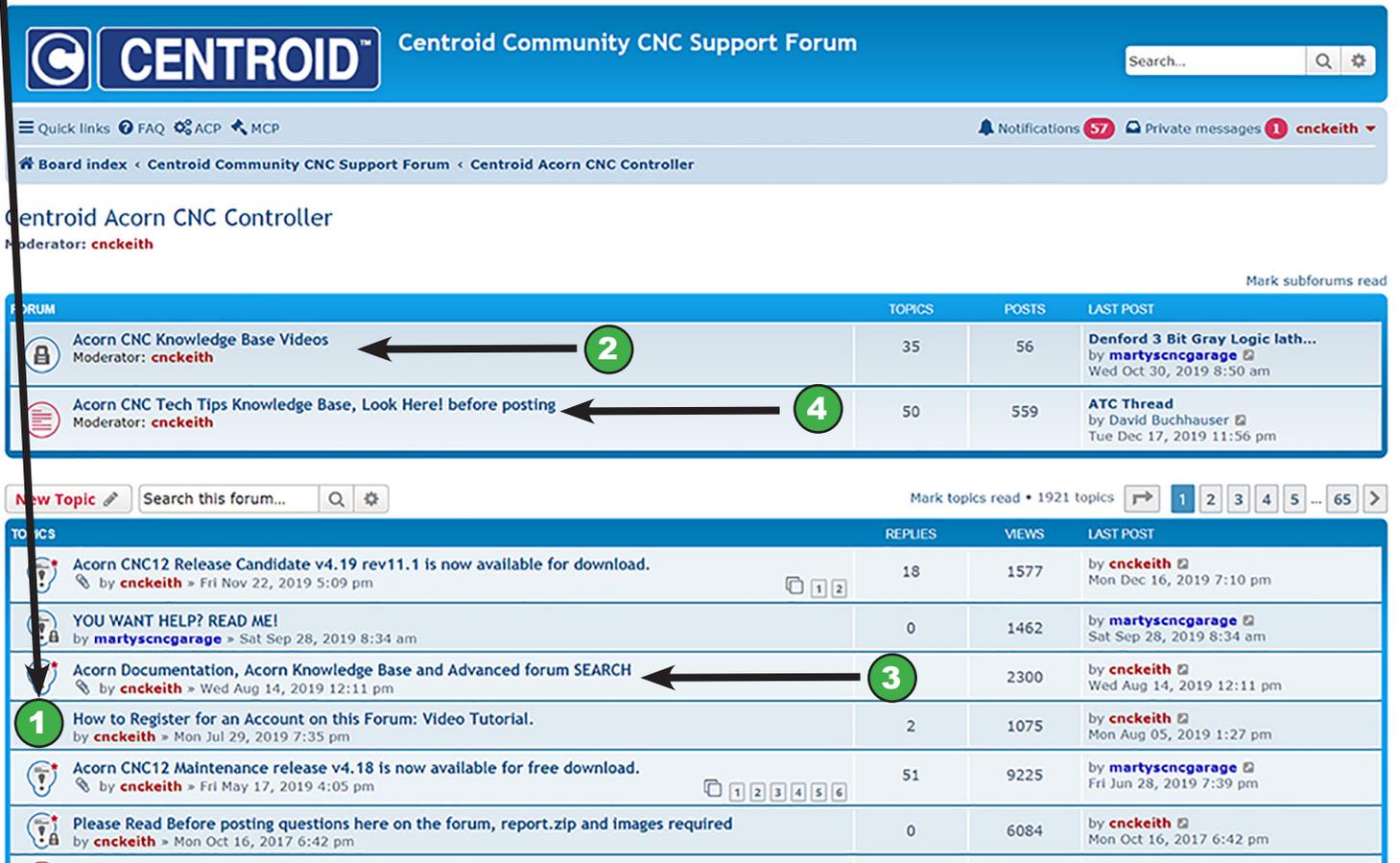


Thanks for purchasing a Centroid Acorn CNC control kit!

To ensure your success, please familiarize yourself with the Acorn technical information available before applying power to the Acorn. There are many man hours of technical CNC details freely available for the Acorn DIY'er to benefit from on the Centroid website and on the Acorn CNC support forum. Below is a guide to that information.

1 Acorn is a DIY CNC product. The number one way to get good help is to **SIGN UP FOR FREE TECH SUPPORT!** There is a video on the forum that shows you how to sign up for free support. www.centroidcncforum.com



Centroid Community CNC Support Forum

Search...

Quick links: FAQ, ACP, MCP

Notifications: 57 Private messages: 1 cnckeith

Board index > Centroid Community CNC Support Forum > Centroid Acorn CNC Controller

Centroid Acorn CNC Controller
Moderator: **cnckeith**

Mark subforums read

FORUM	TOPICS	POSTS	LAST POST
Acorn CNC Knowledge Base Videos Moderator: cnckeith	35	56	Denford 3 Bit Gray Logic lath... by martyscncgarage Wed Oct 30, 2019 8:50 am
Acorn CNC Tech Tips Knowledge Base, Look Here! before posting Moderator: cnckeith	50	559	ATC Thread by David Buchhauser Tue Dec 17, 2019 11:56 pm

New Topic Search this forum... Mark topics read • 1921 topics

TOPICS	REPLIES	VIEWS	LAST POST
Acorn CNC12 Release Candidate v4.19 rev11.1 is now available for download. by cnckeith » Fri Nov 22, 2019 5:09 pm	18	1577	by cnckeith Mon Dec 16, 2019 7:10 pm
YOU WANT HELP? READ ME! by martyscncgarage » Sat Sep 28, 2019 8:34 am	0	1462	by martyscncgarage Sat Sep 28, 2019 8:34 am
Acorn Documentation, Acorn Knowledge Base and Advanced forum SEARCH by cnckeith » Wed Aug 14, 2019 12:11 pm	2300		by cnckeith Wed Aug 14, 2019 12:11 pm
1 How to Register for an Account on this Forum: Video Tutorial. by cnckeith » Mon Jul 29, 2019 7:35 pm	2	1075	by cnckeith Mon Aug 05, 2019 1:27 pm
Acorn CNC12 Maintenance release v4.18 is now available for free download. by cnckeith » Fri May 17, 2019 4:05 pm	51	9225	by martyscncgarage Fri Jun 28, 2019 7:39 pm
Please Read Before posting questions here on the forum, report.zip and images required by cnckeith » Mon Oct 16, 2017 6:42 pm	0	6084	by cnckeith Mon Oct 16, 2017 6:42 pm

- 2** Before Hooking anything up to the Acorn follow the step-by-step Acorn setup video series called “Centroid Acorn CNC Basics - Video series” located in the Acorn CNC Knowledge Base Video category. Perform a “Bench Test” following the video and using the “Basic Power and Communication” Acorn Hook-up schematic.
- 3** Links to all Acorn Documentation such as, Acorn Hookup Schematics, Probe Setup guide, Axis pairing guide, Macro programming guide, Acorn Specifications manual, CNC12 Operator Manuals and more is located on the Acorn forum as well.
- 4** Then as you progress be sure to read the posts in the “Acorn CNC Knowledge Base” forum for detailed CNC setup information covering a wide range of common Acorn CNC technical support subjects. Valuable time saving information contained here.

Acorn is an educational DIY (do it yourself) product. Centroid makes no warranties or claims of safety or suitability for any application. Any schematics or wiring hookup instructions presented on Centroid’s website or in the on-line forums are incomplete educational examples for discussion only. The user, DIY’er is creating his/her own CNC device, which may include dangerous voltages, powerful motors and resulting dangerous unexpected forceful motion of dangerous cutters and fast moving heavy machine parts.

If you are not qualified to accept all responsibility and/or you do not agree, DO NOT PROCEED.

Always follow this schematic and the online bench test installation videos BEFORE making any other connections.
www.centroidcnc.com/centroid_diy/acorn_quick_start_guide.html

Title: ACORN_rev4, BASIC POWER AND COMMUNICATION CONNECTIONS, Bench Test

Date: 190227

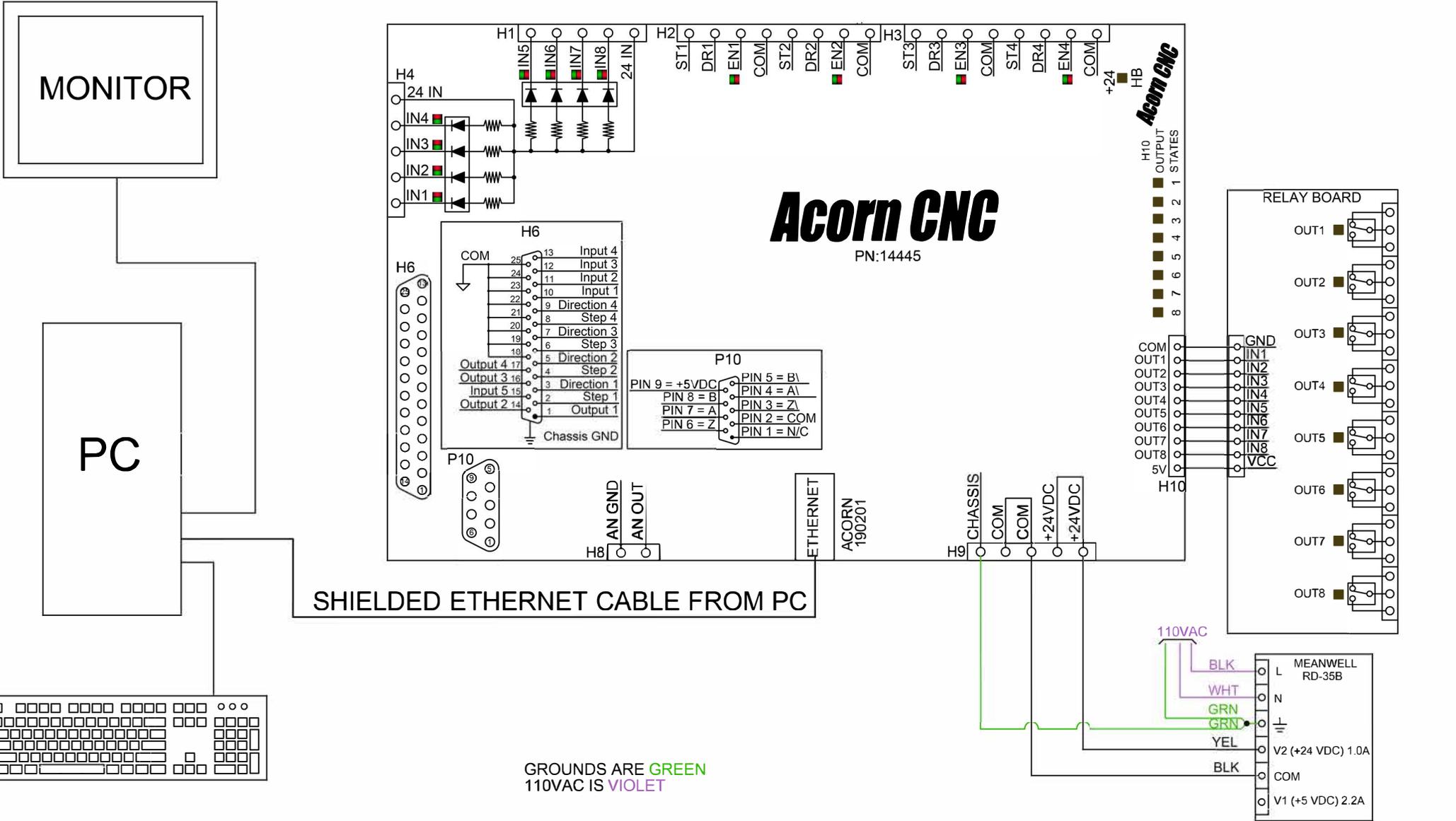
Ver: 1

Drawn by: CEM

Filename: S14952.DWG

Sheet 1 of 1

How to tell the difference between Acorn_rev2, Acorn_rev3 and Acorn_rev4
 Acorn_rev2 has FIXED green screw terminal blocks
 Acorn_rev3 has REMOVABLE green screw terminal blocks
 Acorn_rev4 has LED indicators for the Inputs and Outputs



GROUND IS GREEN
 110VAC IS VIOLET

Acorn Bench Test: Acorn to CNCPC communication test.

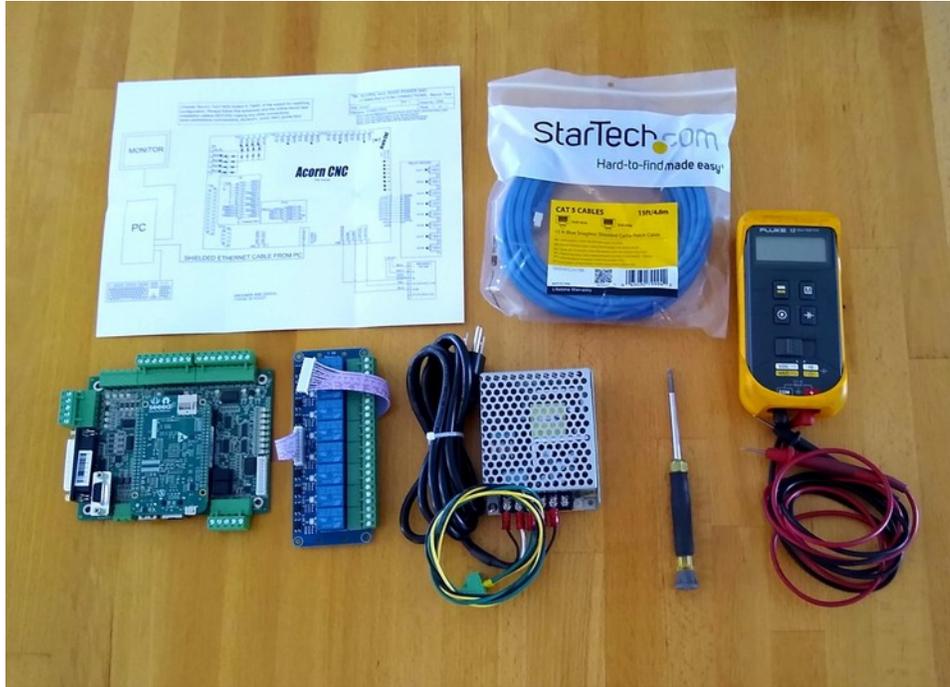


Figure 1: BenchTest equipment

Follow along in the Acorn CNC controller communication Bench Test video <https://youtu.be/W7cP7jwuGno>

Tools and Equipment Needed

- Picking a good location – A bench test needs to be performed on a large table or desk with good lighting and easy access to electrical outlets. Do not use metal or plastic surfaces or surfaces that may contain metal scraps or shavings, as we will be resting powered circuit boards on the surface. Do not use fabric covered surfaces as it may cause ESD (electrostatic discharge) damage. A wooden surface is an ideal test bench location.
- A PC with an internet connection, or a Centroid console unit which comes with CNC12 already installed. The PC must meet the specifications listed in Technical Bulletin #273, which can be found [here](https://www.centroidcnc.com/centroid_diy/acorn_quick_start_guide.html).
- A small screwdriver set.
- A digital multimeter

Be sure to sign up for Free Acorn CNC Technical Support here.
<https://centroidcncforum.com/viewtopic.php?f=60&t=3498>

Acorn Communication Bench Test

1. **Connect the relay board:** Use the included flat white 10 conductor cable to plug the relay board into the acorn.
2. **Connect the power supply to Acorn:** Leaving the meanwell power supply disconnected from 110VAC, Plug the 5 pin terminal block into H9. (Note: Power supply will also work with 240VAC supply.)
3. **Connect the Ethernet Cable:** Connect a shielded Ethernet cable to the Acorn. Connect the other end to the CNCPC (note: A shielded Ethernet cable is required and will have a metal clip around the RJ-45 connector it as shown by the blue cable in Figure 2 A Part# 7269 15ft Shielded Ethernet cable is included with the Acorn kit.
 1. **Note:** An unshielded cable can cause intermittent PC Data receive errors in the software due to electronic noise and interference. See TB270: https://www.centroidcnc.com/dealersupport/tech_bulletins/uploads/270.pdf
 2. **Note:** Ethernet should be connected directly to onboard or PCI/PCI-E network adapter. Some systems ship with a USB-Ethernet adapter. Ethernet though USB may be used for internet network access but must not be used for CNC control to Centroid Acorn.

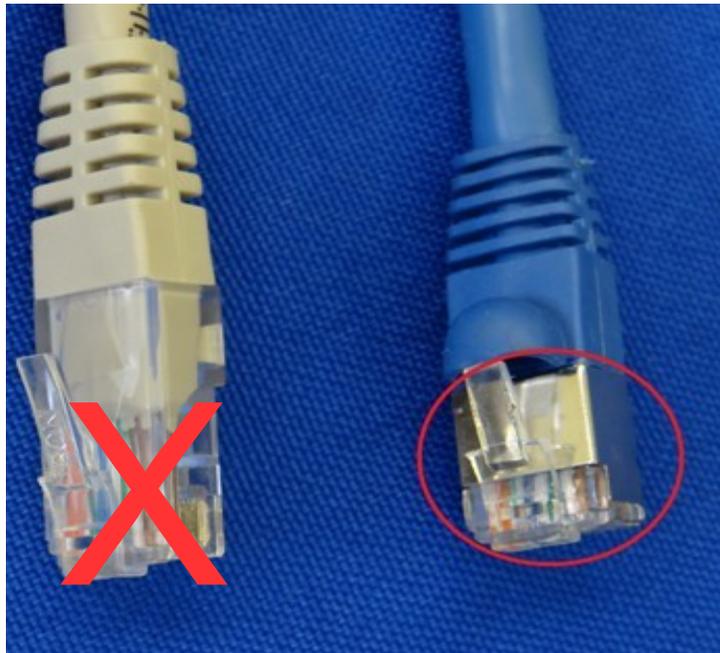


Figure 2: Unshielded Ethernet cable (gray) compared to Shielded Ethernet cable (blue)

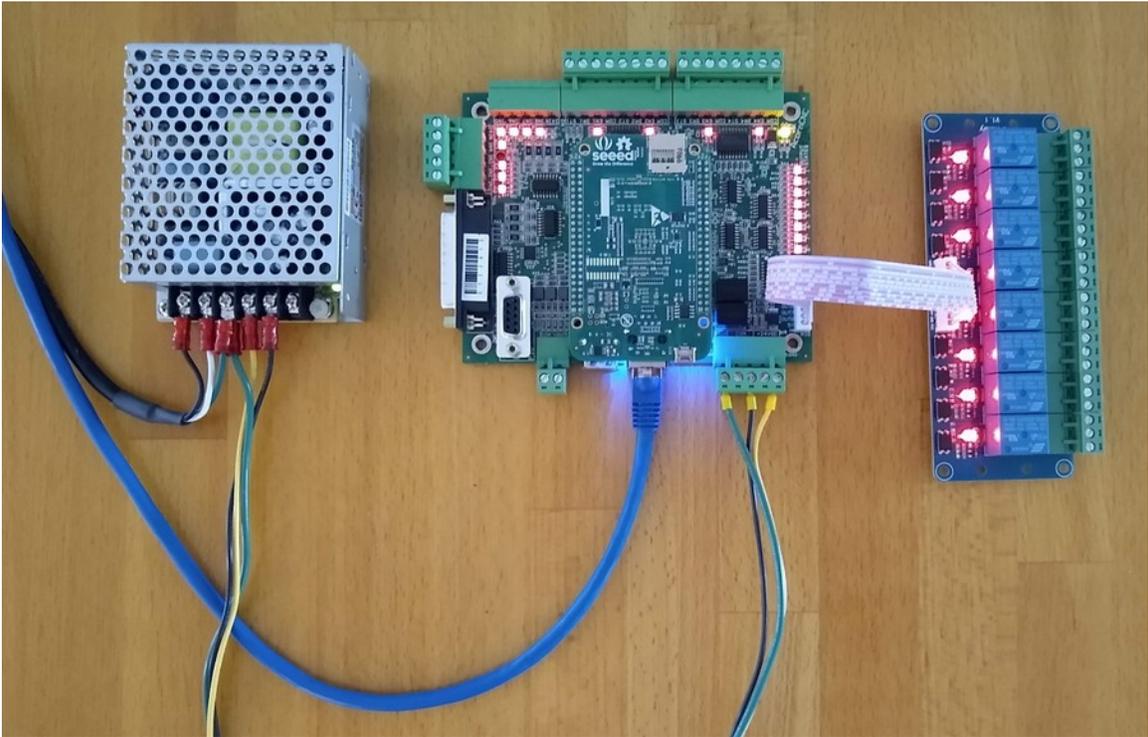


Figure 3: Acorn Bench test hookup

- 4. Plug in the Meanwell power supply to the AC power source.** The Acorn green power LED (Figure 2.2.4) will be lit, and the "Heart beat LED will blink rapidly initially and then blink at one pulse per second.(hence the name Hearbeat) the heartbeat indicates that Acorn has booted the firmware and is ready to go.



Figure 4: CNCPC ethernet connection

Windows 10 configuration for CNC use:

a.) Microsoft Windows 10 is the only supported operating system for use with Acorn CNC12. (Microsoft Windows 8.1, 7 and older versions of Windows and Mac OS and Linux are not supported.

b.) If you have purchased a console unit or computer from Centroid, the Windows 10 OS on the Centroid CNCPC has been preconfigured for CNC use. But it is still recommended to verify and follow along in the process.

If you bought or built your own computer, it must meet the prerequisites listed on the Centroid Website here http://www.centroidcnc.com/cnc_pc_performance_requirements.html

c.) Before installing CNC12 all anti-virus, anti-malware, and 3rd party firewall software should be uninstalled (not just disabled) and your computer rebooted.

- 99% of all communication problems between CNC12 and the Acorn are caused by anti-virus and 3rd party firewall software. Virus software works by stopping unusual or suspicious behavior in software, and will almost always detect the interaction between the Acorn and the PC as unusual/suspicious and interfere with the operation of CNC12. Firewalls work by blocking certain communication ports, and often these ports are needed for the operation of CNC12. The default firewall built into Microsoft Windows will work fine with CNC12 if you allow access as specified in this manual.

- If your corporate policy requires anti-virus software, a third party firewall, or that certain Windows security features be enabled to connect to the network, then Centroid recommends that you keep any computers with CNC12 installed disconnected from the network.

Configure Windows 10 for CNC use by following along in the Bench Test video here..

<https://youtu.be/W7cP7jwuGno>

or using the Windows 10 for CNC12 configuration document here.

https://www.centroidcnc.com/dealersupport/tech_bulletins/uploads/309.pdf

CNC12 Software Installation

Note: Installation of Acorn CNC12 is covered in the in the Bench Test video as well...here..

<https://youtu.be/W7cP7jwuGno>

With your bench configuration completely powered as described in Section 2.4 and your PC powered up, install the CNC12 Software as follows:

1. Click on the link to download the latest version of CNC12 software: [Centroid CNC Software](#)
2. Navigate to the CNC12 zip file just downloaded and extract the zip file, right click “extract all”.
3. Open extracted folder and Double click “Setup.exe”
4. If “**User Account Control**” is enabled, Windows will ask “*Do you want to allow the following program from an unknown publisher to make changes on this computer?*”. Click “**Yes**”. Windows 10 systems may pop up a Windows Defender SmartScreen showing “Windows Defender SmartScreen prevented an unrecognized app from starting. Running this app might put your PC at risk”. Click “More info”, Then Click “Run anyway”
5. **Read License Agreement** Read the Software license agreement for using the CNC12 Software. If you accept the terms of the agreement, click “I Agree” to continue, Otherwise, click “Cancel”.

6. Select **CNC12 Mill** for a Mill installation as shown in Figure 1.

Select **CNC12 Lathe** for a Lathe installation. For the remainder of this document we will assume the system is being installed on a mill.

Click **“Next”**.

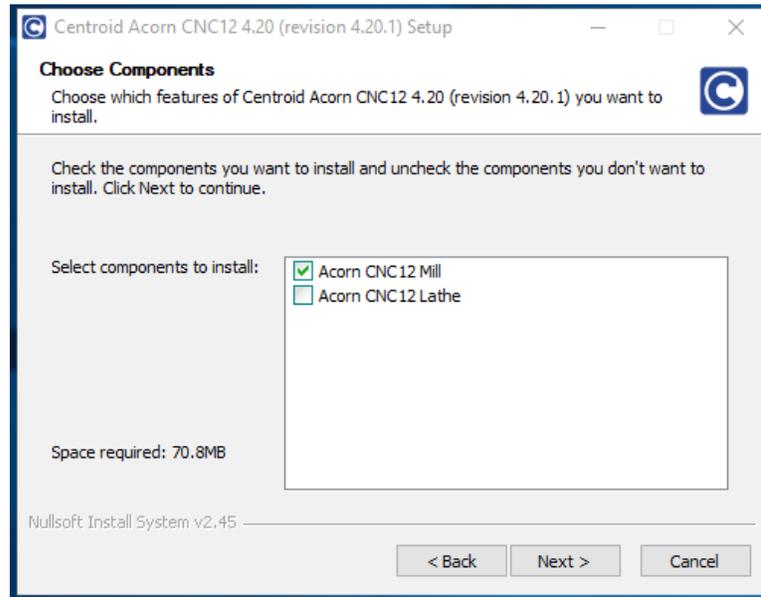


Figure 1: Selecting Acorn CNC12 Mill

7. **Select** the default machine units, Imperial or Metric. Then click **“Install”**

8. CNC12 will be installed. Click **“Next”** in the “Installation Complete” window to continue.

9. **Network Adapter Setup: (IMPORTANT: Acorn needs to be powered up and connected to the CNC PC via the provided Ethernet Cable). If there are two ethernet ports on the CNCPC the CNC12 installer will ask you which one are you using for the Acorn.** Click the down arrow to display the network adapters that are currently installed and select the network adapter that is connected to the Acorn as seen in Figure 2. Click **“Next”** to continue. When asked if you would like to change the IP address for the adapter selected, click **“yes”**.

NOTE: Centroid recommends using a computer with two Ethernet ports. One Ethernet port and one Wifi adapter is also acceptable. That way one Ethernet port is used for the Acorn, and the second wired Ethernet port can be used to access the internet or a LAN. If you do have two Ethernet ports, install the CNC12 software with the Ethernet port that connects to the LAN/internet disconnected. This way the software will automaticall configure correct Ethernet port for the Acorn.

Note: Your CNCPC IP address will differ from those shown in the picture.

10. Click **“Finish”** to complete **CNC12 software installation**.

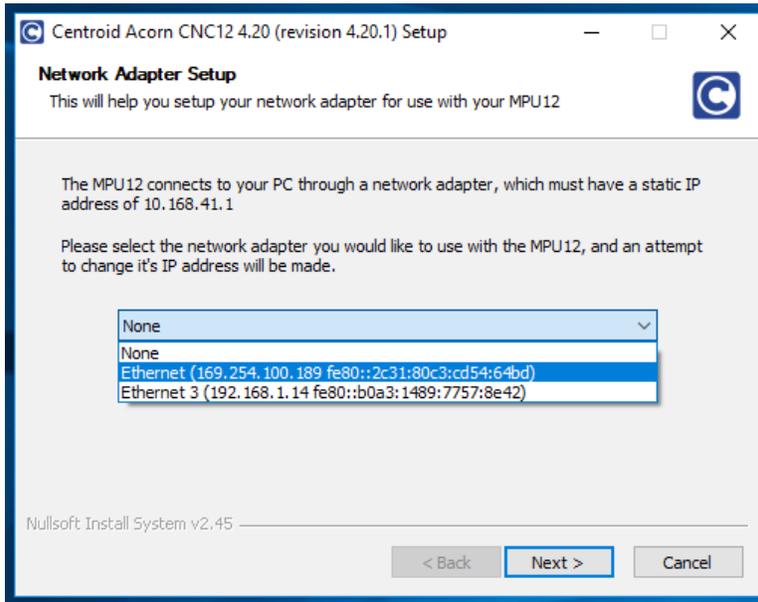


Figure 2: Selecting Network Adapter connected to Acorn

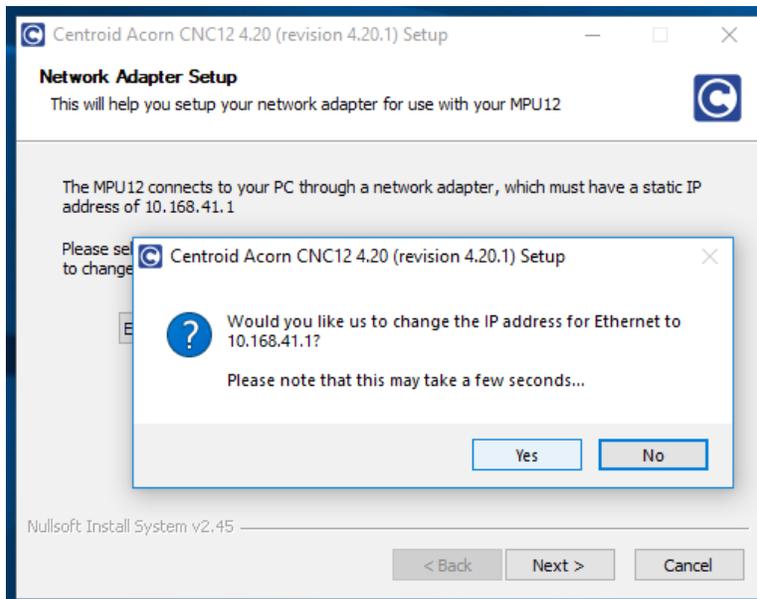


Figure 3: Confirm change of IP address for Network Adapter