VERSA BUILT ROBOTICS

VersaBuilt Robotics

Robot2CNC

Fanuc Focas CNC Kit

Product No. 5006650

Why Robot2CNC?

VersaBuilt Robotics Robot2CNC provides a simple and easy way to communicate with CNCs.

This communication kit provides the ability to run any program on a CNC, cycle start the CNC, and check to see if the program completed successfully.

The Robot2CNC allows testing robot and CNC independently to enable easy proving out of automated processes.

The value this kit provides to a programmer:

- Enables creation of robot programs based on a part number (or dynamically) to easily change between different types of parts
- Enables running multiple operations on a single part
- Enables other programs to run as commanded by the robot (wash program or table load program)

The value this kit provides to an installer:

- Simple installation
- Isolated testing
- Defined API
- Compatible across multiple brands of CNCs

Overview

The purpose of this document is to detail the installation steps and usage of the Fanuc Focas Kit for the Robot2CNC

The Fanuc Focas kit allows:

- Program selection on Fanuc Focas CNC Controllers
- Cycle Starting the CNC
- Status results back from the CNC to indicate successful CNC program completion

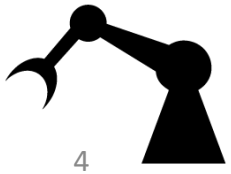
Functionality of the Robot2CNC Fanuc Focas Kit is completed by:

- Sending TCP/IP packets between the Robot2CNC and CNC controller through an Ethernet cable
- Starting the CNC through a relay signal from the Robot2CNC to energize the CNC cycle start button
- Signaling the completion of programs from the CNC to the Robot2CNC is completed with software running on the CNC
- Each program must end with the following command:

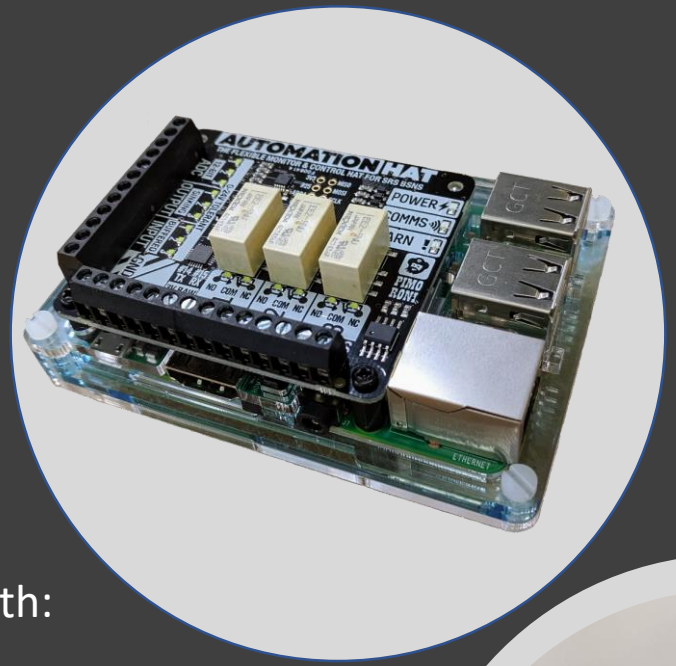
M98 P9004

Fanuc Focas Controller Requirements

- Macro Variables
- User-Definable Macros:
  - Ability to use M98 to call a program with a macro such as M98 [890]
- Focas 2.0 or greater



In The Box



- Robot2CNC Appliance
- USB Flash Drive (5003885) with:
  - Software for CNC
  - Manuals
  - Software for Robots
- Ethernet Cables (5003974) qty 2
- Ethernet to USB dongle (5006782)
- Wiring for cycle start connection (5006866)

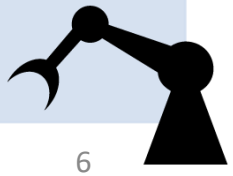
Steps

Connect

- Ethernet Cable from Robot2CNC to Fanuc Focas CNC
- Cycle Start wires from Robot2CNC to CNC Controller

Install

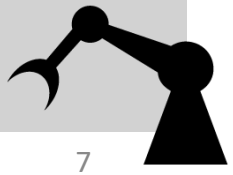
- 9000.nc and 9004.nc on CNC Controller
- Configure CNC Controller
- Configure Robot2CNC to match CNC settings



Connect

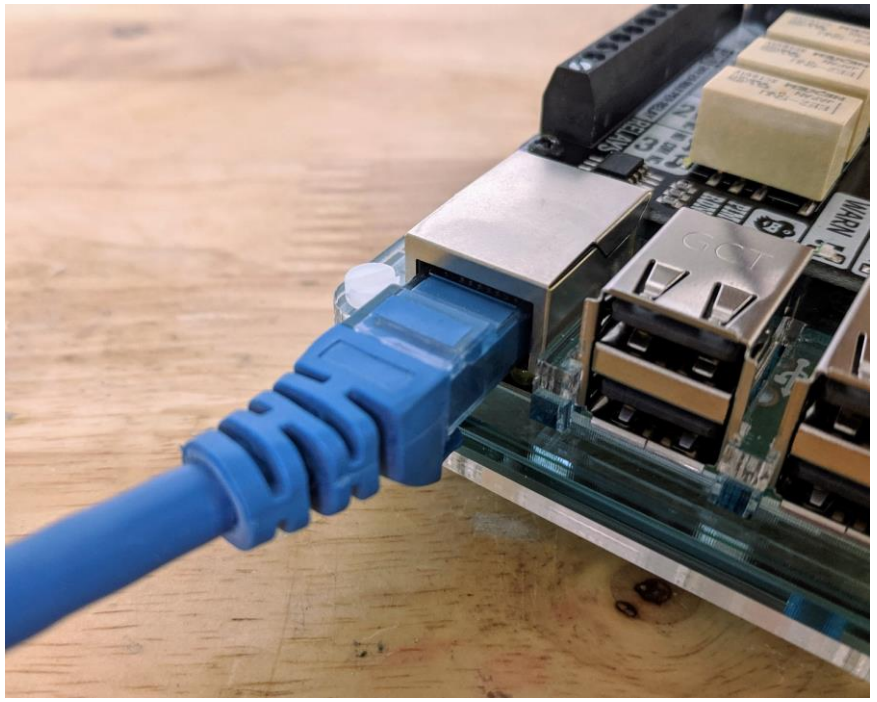
Ethernet Cable

Cycle Start Wires



Installation of Network Cable

- Connect the Ethernet cable directly to the Robot2CNC Ethernet port
- This port is the Eth0 interface and the IP Address will default to 192.168.50.1

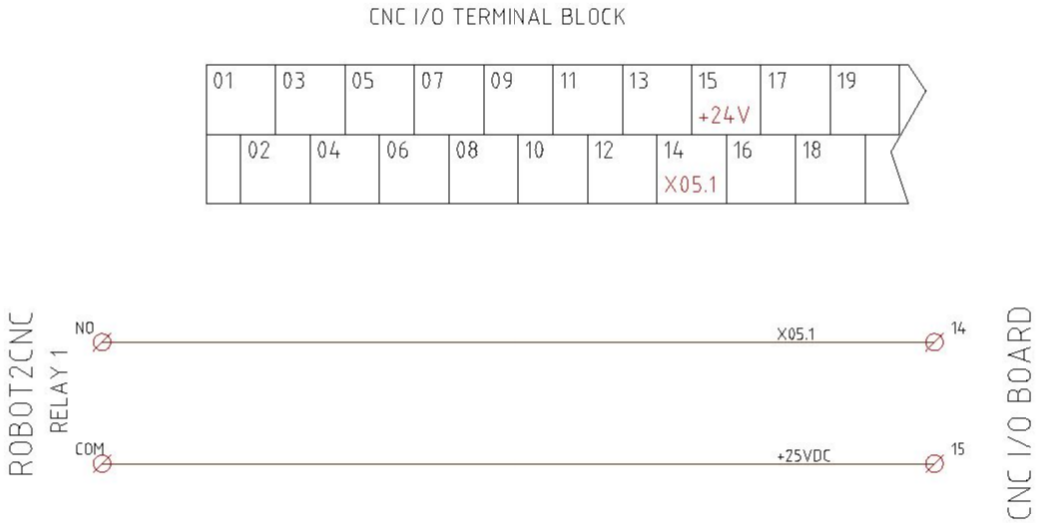


Installation of Network Cable

- Connect the other end of the Ethernet cable to the Fanuc Focas CNC Controller

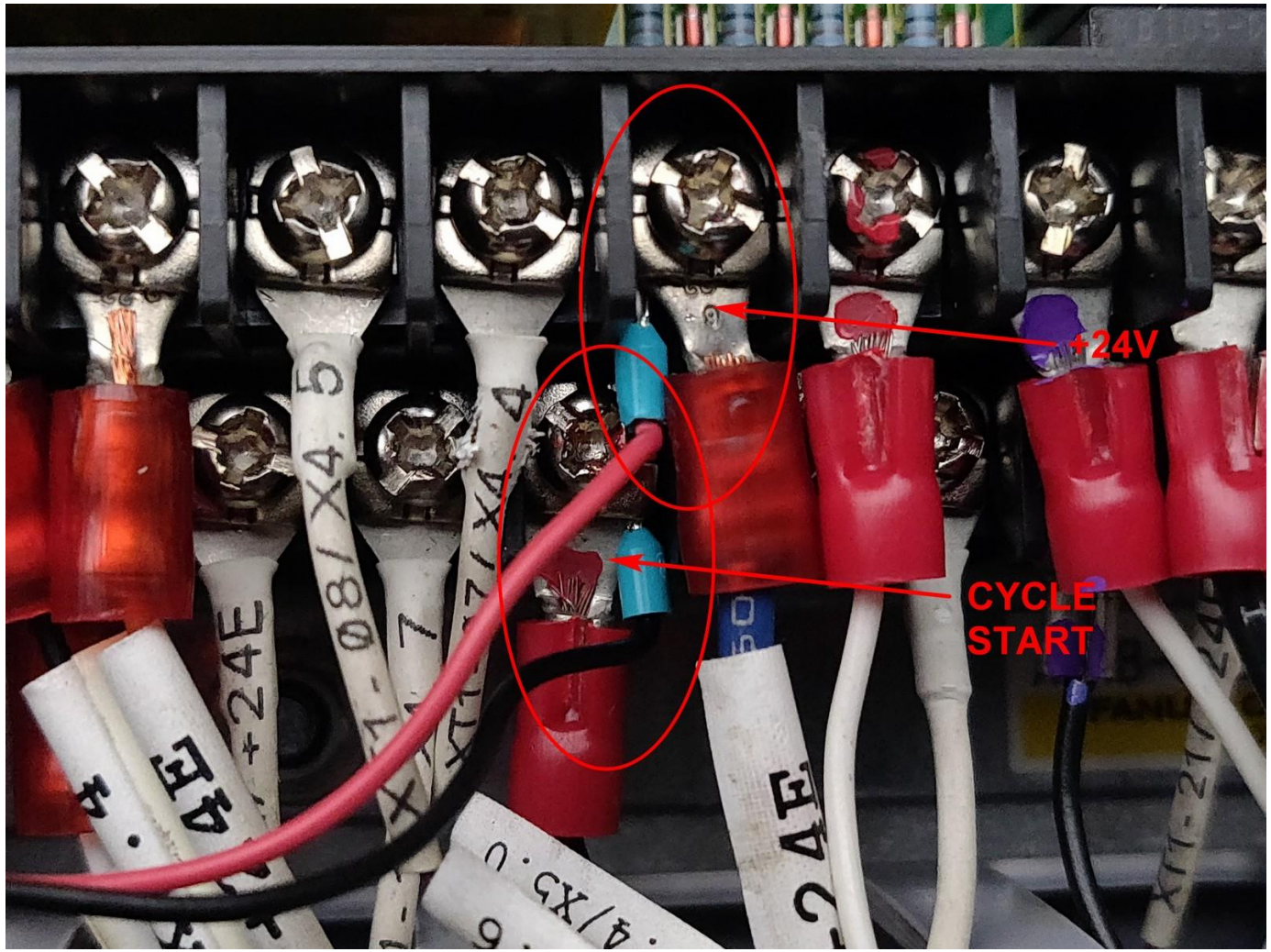
Cycle Start Wiring

Connecting to Fanuc Focas CNC Controller



1. Tools Needed:
    - Phillips head screwdriver
    - M4 Allen wrench
    - Flat head screwdriver
2. Make sure CNC is powered off at main breaker
3. Access the CNC IO connections on the back of the CNC

Contact controller manufacturer for specific layout regarding your controller.



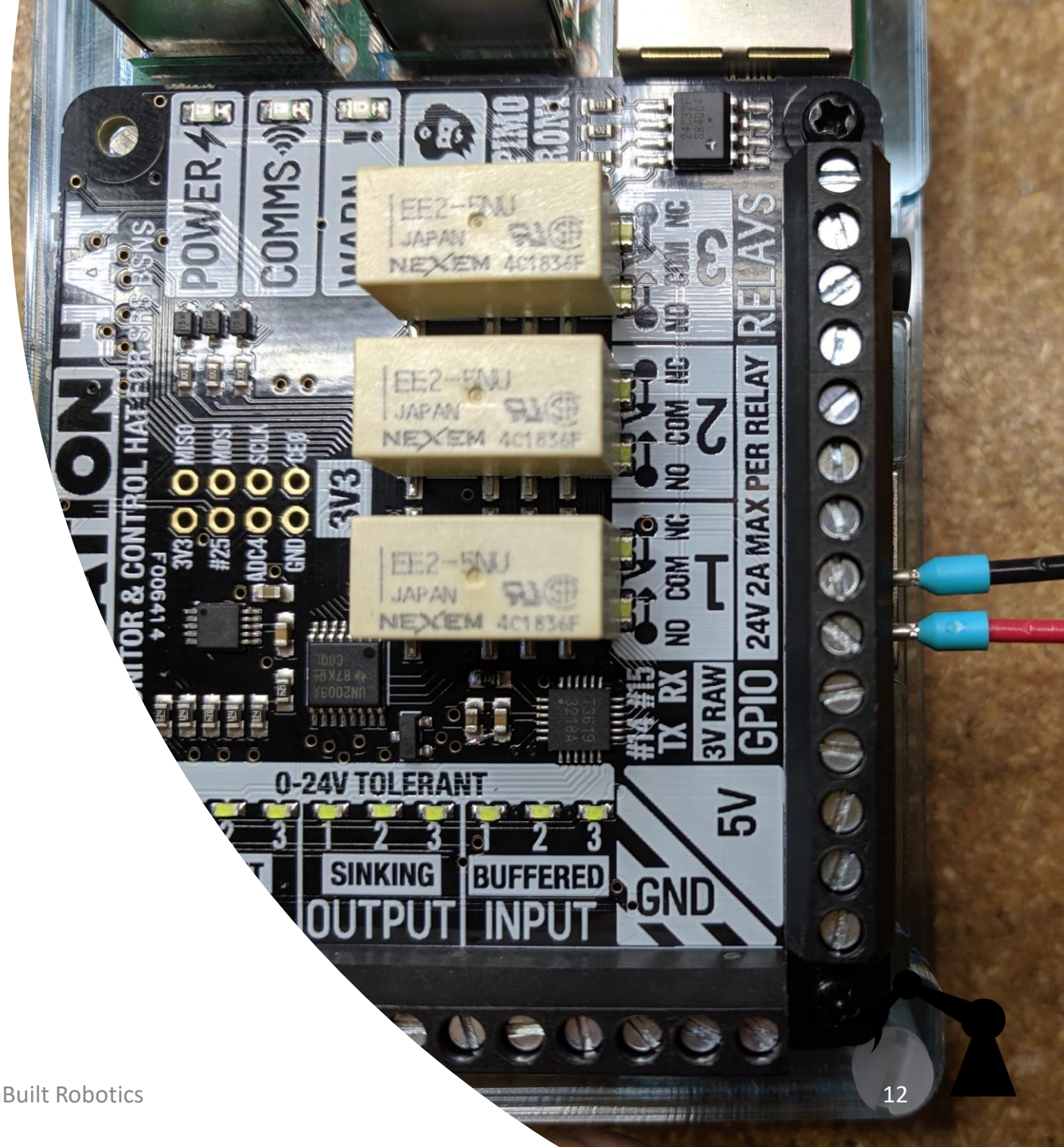
Connect Cycle Start Wiring to RoboDrill CNC Controller

Connecting cycle start wires to Robot2CNC

Tools Needed:

- 1/16” flathead screwdriver

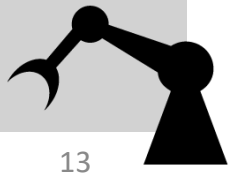
1. Locate relay 1 on the Robot2CNC
2. Using the flathead screwdriver, loosen the terminal marked NO and connect the red wire and tighten it down
3. Repeat the process for the black wire in the terminal marked COM



Install

Software on CNC Controller

Setup Settings



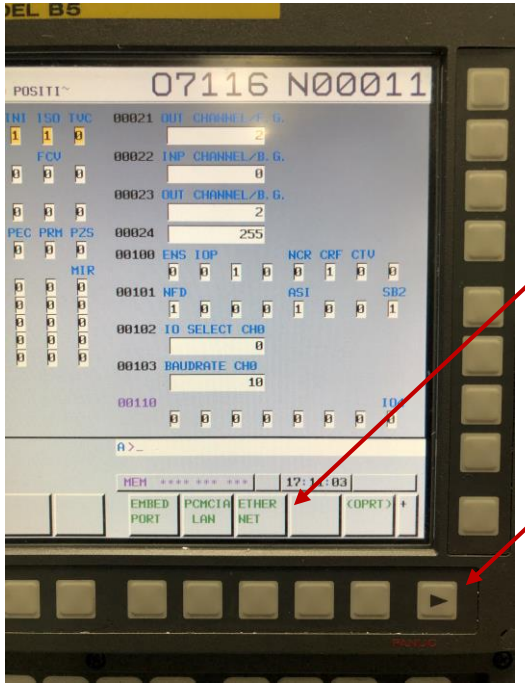
Install CNC Programs on the Fanuc Focas CNC Controller

- Load the following programs from USB to CNC memory:
  - **9000.nc** – VersaBuilt Robotics Dispatcher – Facilitates communication between the CNC and the Robot2CNC
  - **9004.nc** – Sub program used after successful completion of all programs run by the Robot2CNC

These two VersaBuilt Robotics CNC programs enable the Robot2CNC to communicate with the CNC.

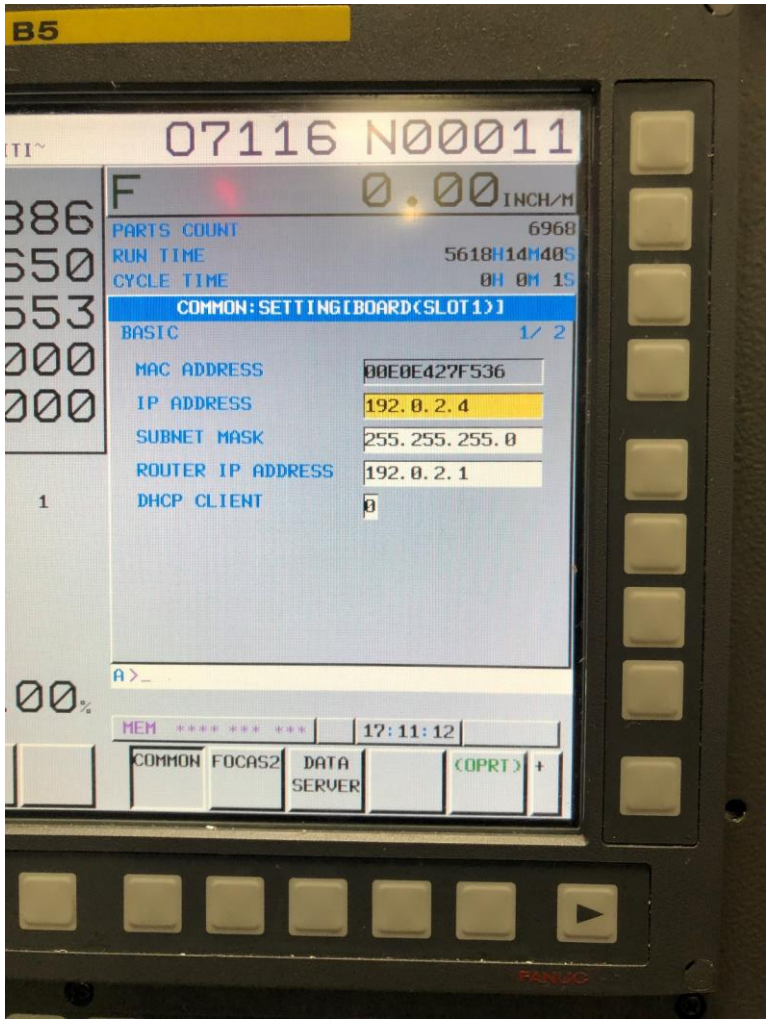
Enter Network Settings on Controller

1. Press the System button
2. Press the right arrow until the Ethernet soft key appears
3. Select the Ethernet softkey



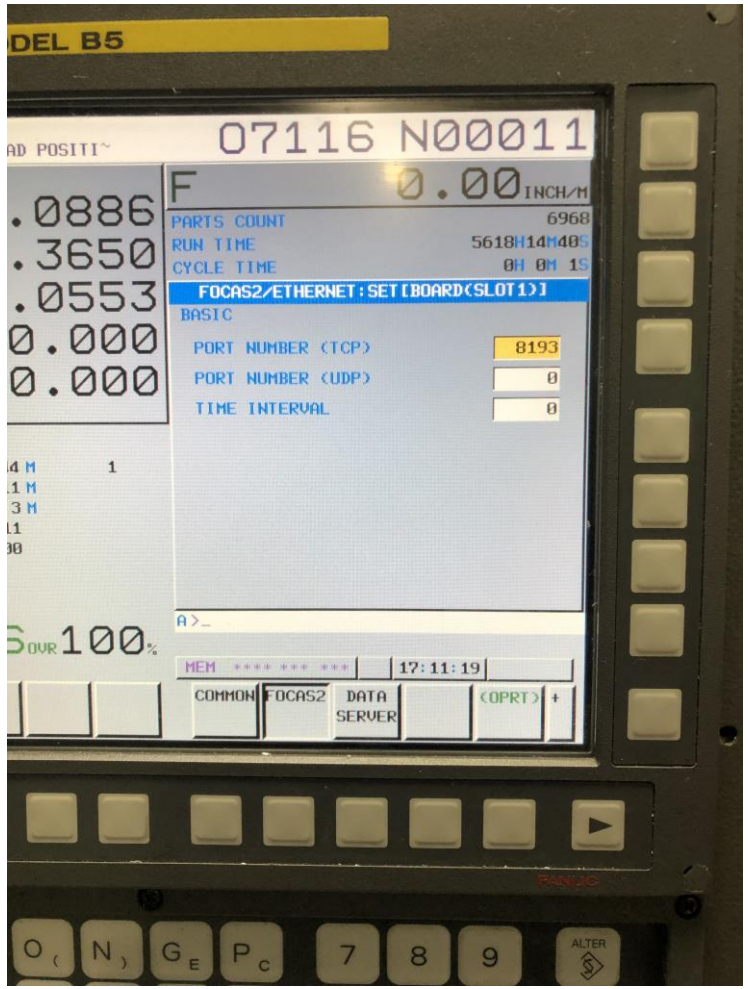
Configure CNC Settings

- Recommended Network Setup
  - IP Address: 192.168.50.4
  - Subnet Mask: 255.255.255.0
  - Default Gateway and DNS Server can be ignored



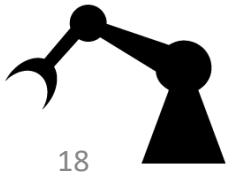
Configure CNC Settings

- To Change the Focas2 port, press the FOCAS2 softkey
  - Focas2 set to port 8193

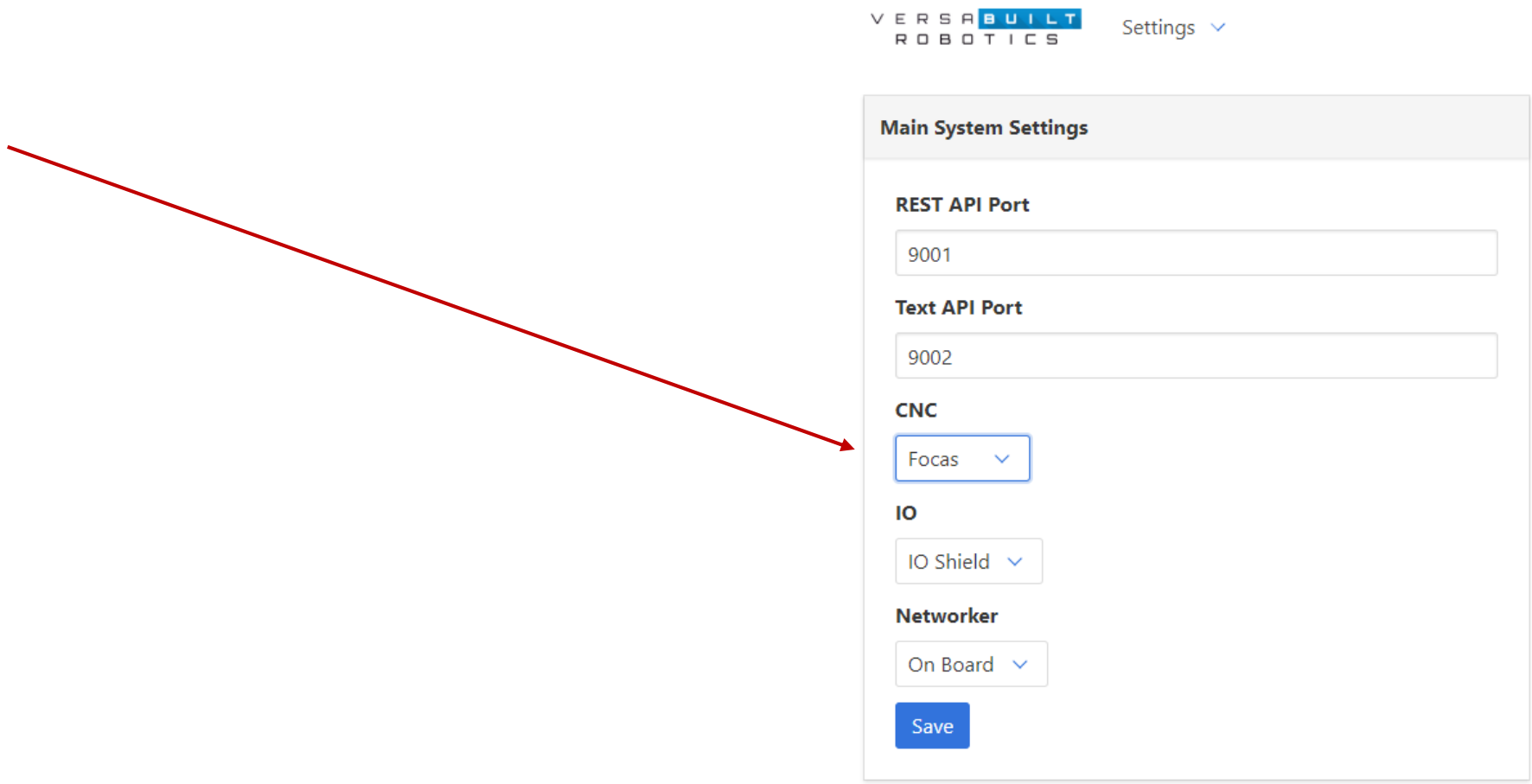


Robot2CNC Setup

- The following pages show how to setup the Robot2CNC to match the Fanuc Focas CNC settings as suggested
- See the Robot2CNC Manual for more settings and how to test the CNC



Select Focas CNC in Main System Settings



Configure CNC in Robot2CNC

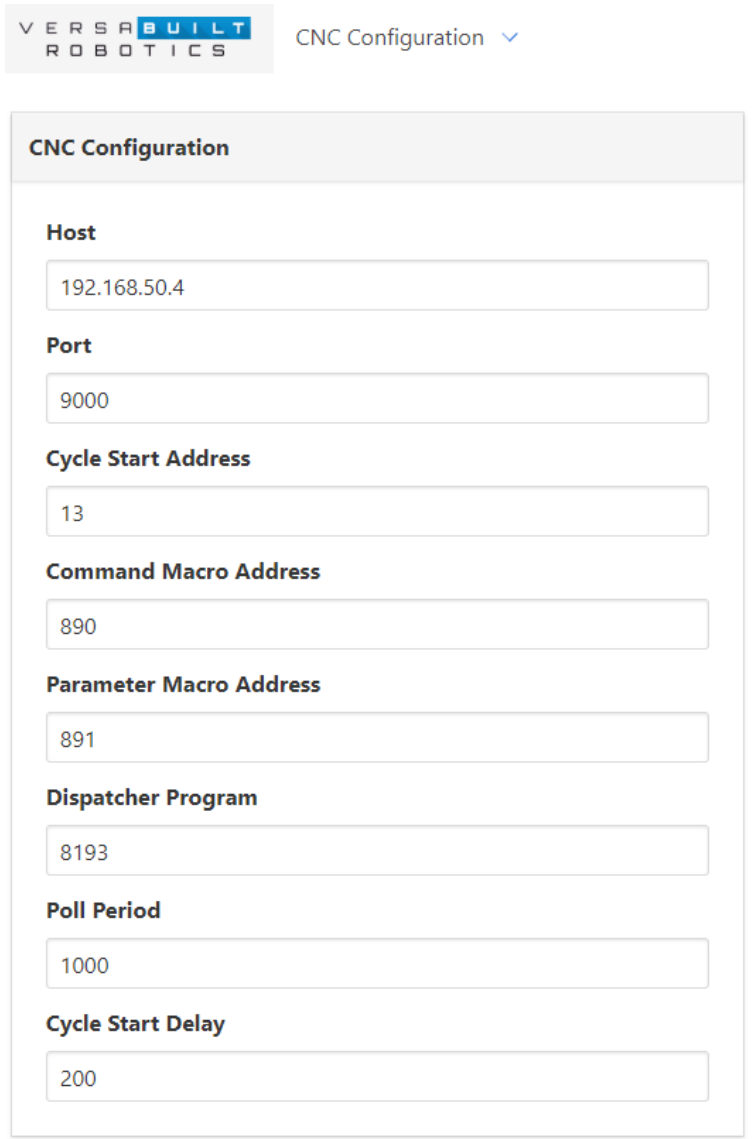
In the menu at the top left, select “CNC Configuration”

Recommended Defaults:

- CNC IP Address: 192.168.50.4
- CNC Port Number: 9000
- Cycle Start Address: 13
- Cycle Start Delay: 200

Click Submit to save any changes

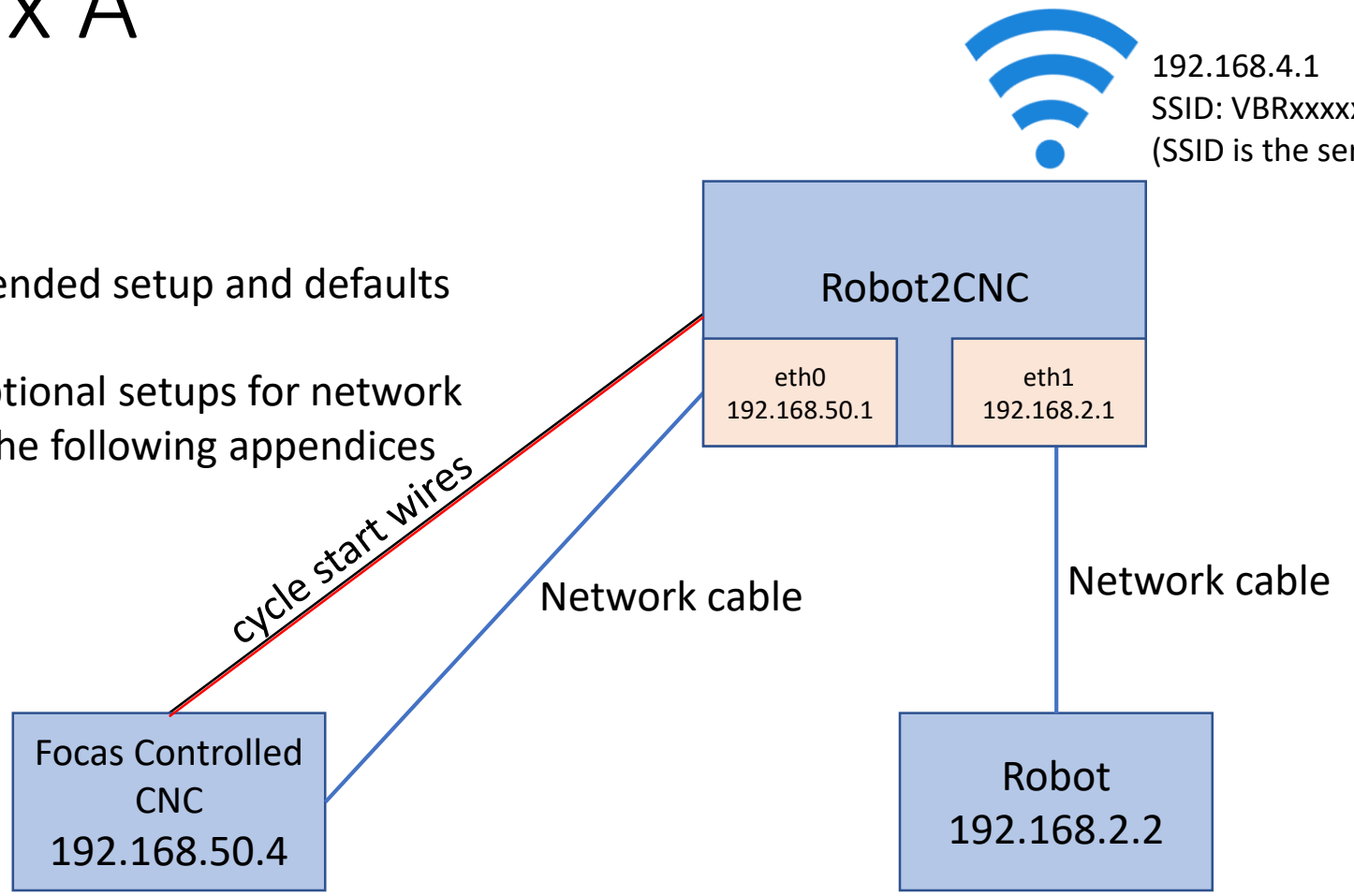
Use menu to switch to the “About” page and click “Restart”



Appendix A

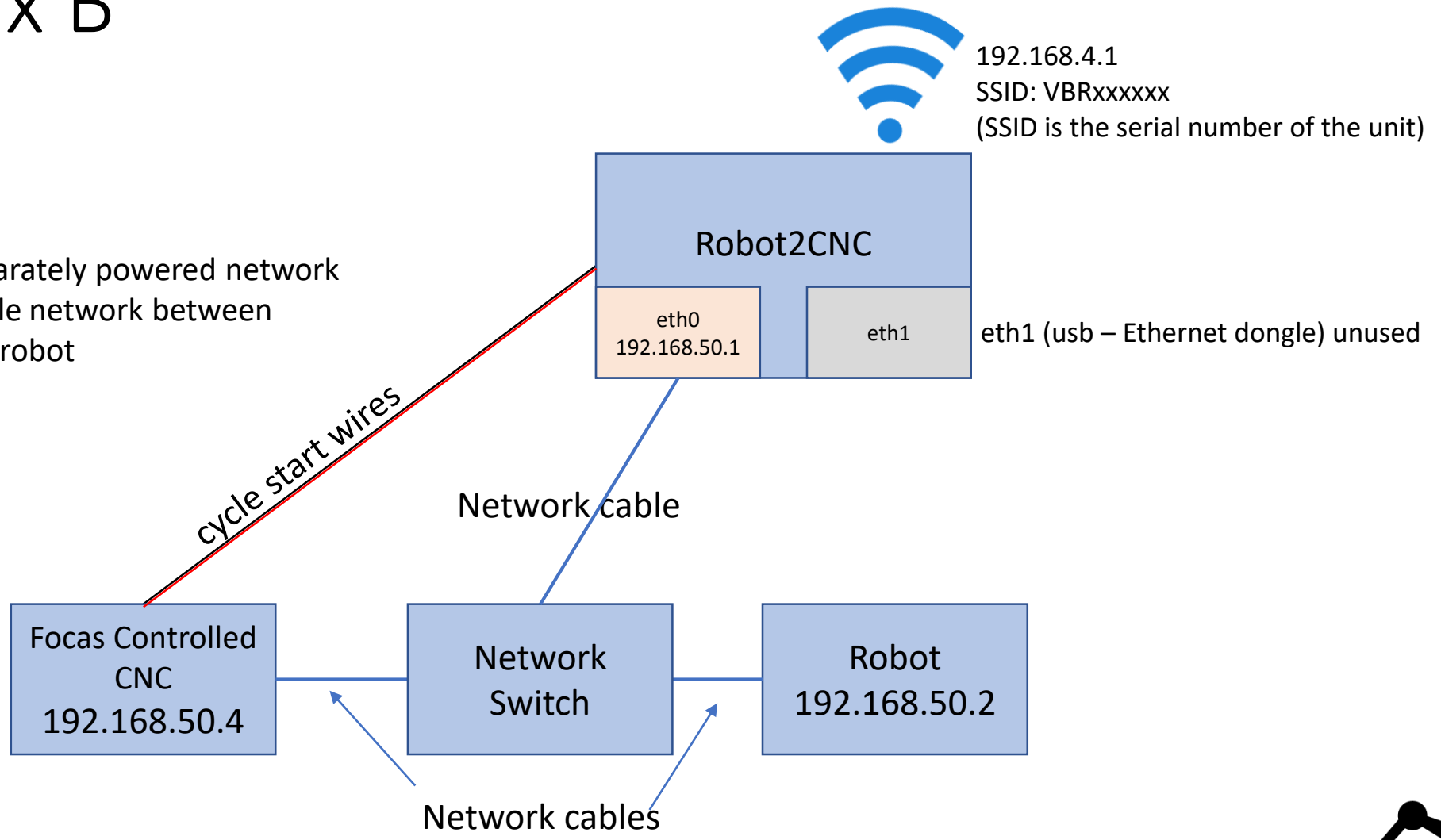
Connection Map:
Standard recommended setup and defaults

There are many optional setups for network connections. See the following appendices for some options



Appendix B

Connection Map:
Optional Setup A
This option uses a separately powered network switch to create a single network between Robot2CNC, CNC, and robot



Appendix C

Connection Map:
Optional Setup B
This option uses existing network and adds Robot2CNC, CNC, and robot

Robot2CNC could also be connected to the existing network via Wi-Fi