VERSA BUILT ROBOTICS

VersaBuilt Robotics

Robot2CNC

Haas Legacy CNC Kit

Product No. 5006652

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 Haas Legacy Communication Kit for the Robot2CNC

The Haas Legacy Communication kit allows:

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

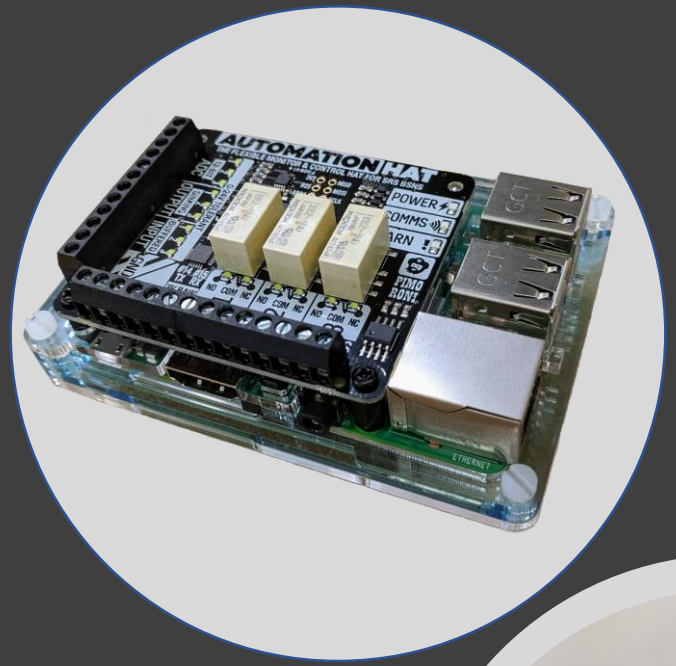
Functionality of the Robot2CNC Haas Communication is completed by:

- 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

In The Box

- Robot2CNC device
- USB Flash Drive with:
  - Software for CNC
  - Manuals
  - Software for Robots
- Ethernet Cable
- Ethernet to USB converter
- Wiring for cycle start connection



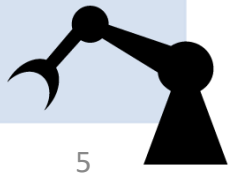
Steps

Connect

- Serial Cable from Robot2CNC to Haas Legacy CNC
- Cycle Start wires from Robot2CNC to CNC Controller

Install

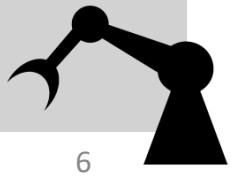
- 9000.nc and 9004.nc on CNC Controller
- Configure CNC Controller
- Configure Robot2CNC to match CNC settings



Connect

Serial Cable

Cycle Start Wires



Installation of Network Cable

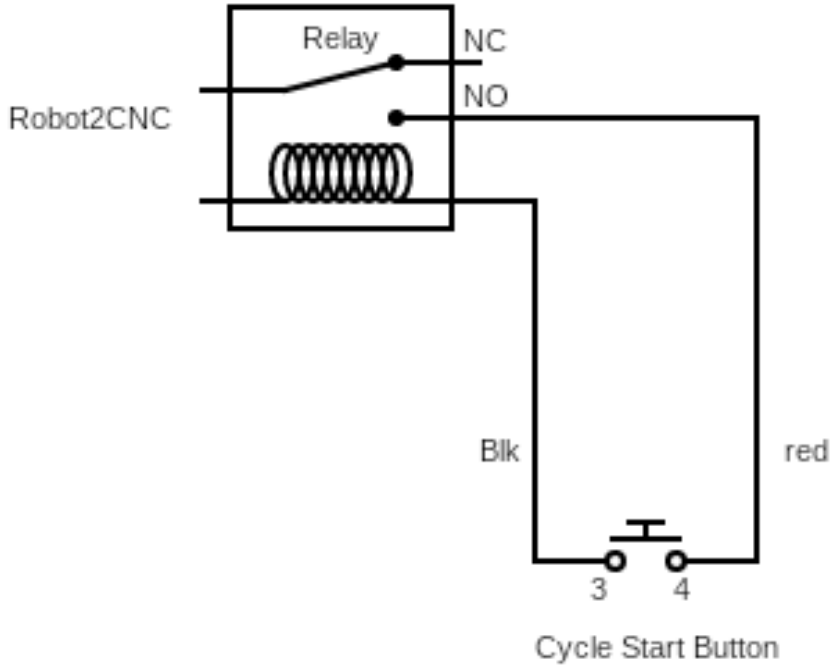
- Connect the Serial to USB converter to the Robot2CNC
- Connect the Serial to USB converter to the Serial cable

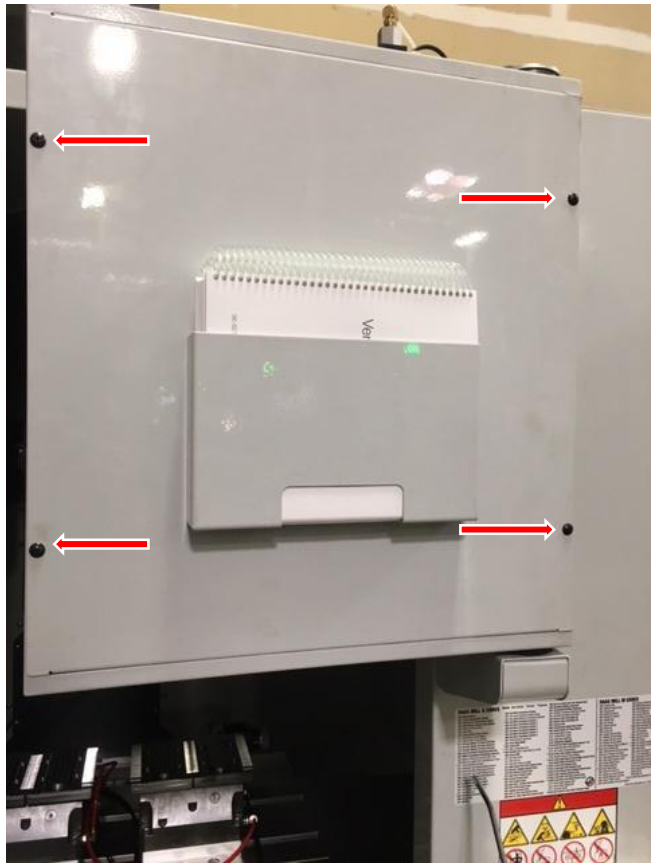
Installation of Serial Cable

- Connect the other end of the serial cable to the Haas CNC Controller

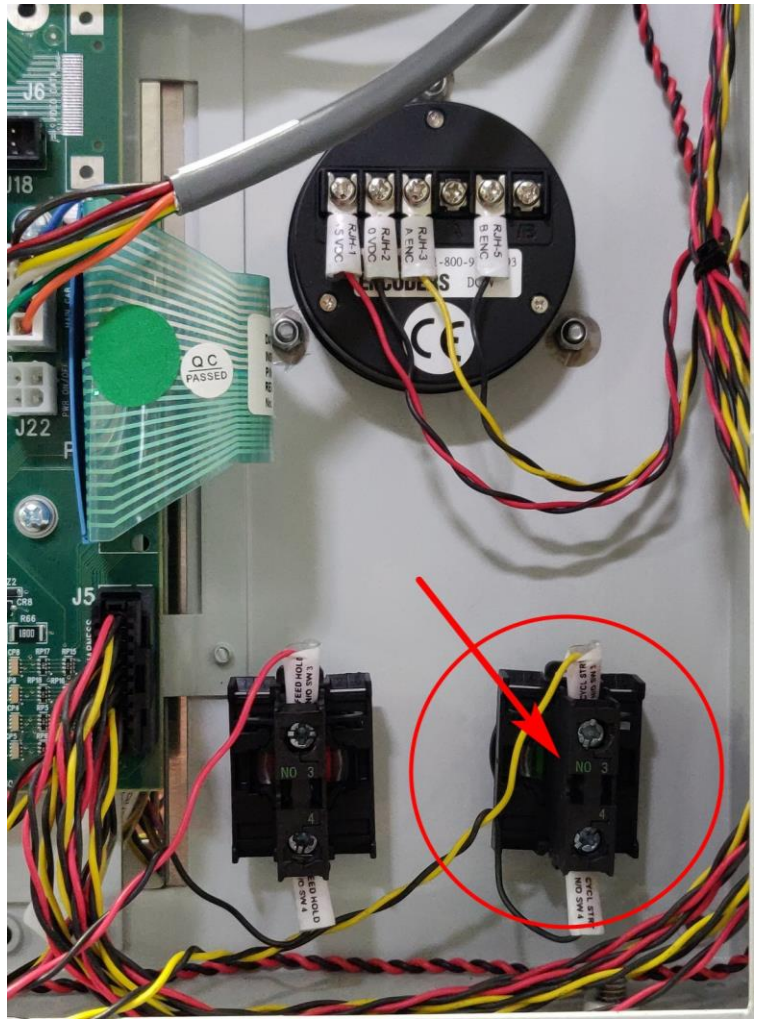
Cycle Start Wiring

Connecting to Haas CNC Controller

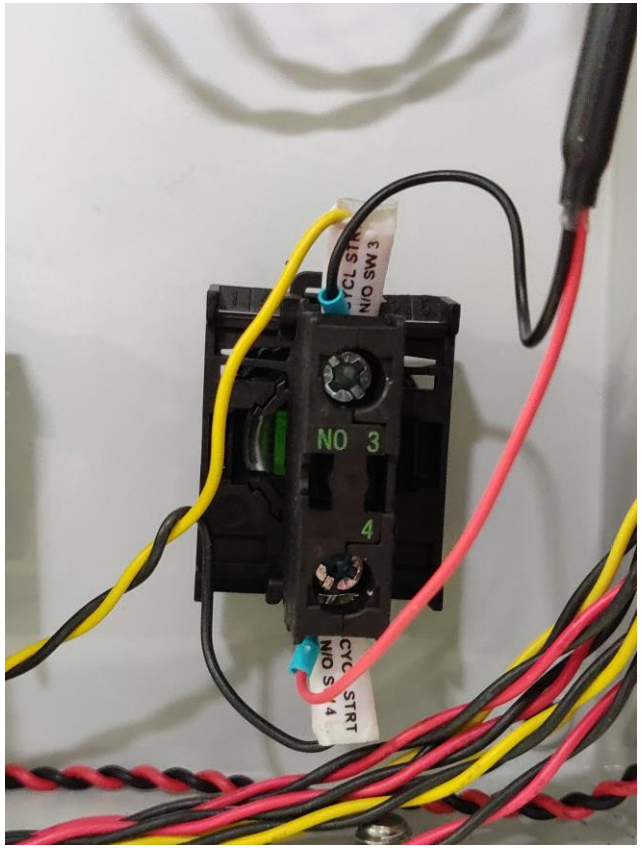




1. Tools Needed:
   - Phillips head screwdriver
   - M4 Allen wrench
   - Flat head screwdriver
2. Make sure CNC is powered off at main breaker
3. Rotate Haas Control Panel to show back of panel
4. Remove the back cover panel on the Haas Control Panel by unscrewing the 4 fasteners with a Phillips head screwdriver or M4 Allen wrench



Connect Cycle Start Wiring to Haas CNC Controller



Connect the cycle start wires:

5. Locate the Cycle Start Button
6. Remove backing with flathead screwdriver
7. Connect the two wires from the wire kit to the terminals on the Button. Polarity does not matter. Either wire can go to either terminal.
9. Route the cable through the cable pass through hole on the Haas Control Panel
10. Route the cable to the Robot2CNC
11. Put back sheet metal cover panel and fasten the 4 screws with a Phillips screwdriver or M4 Allen wrench

**note: some hardware may vary depending on CNC model and year*

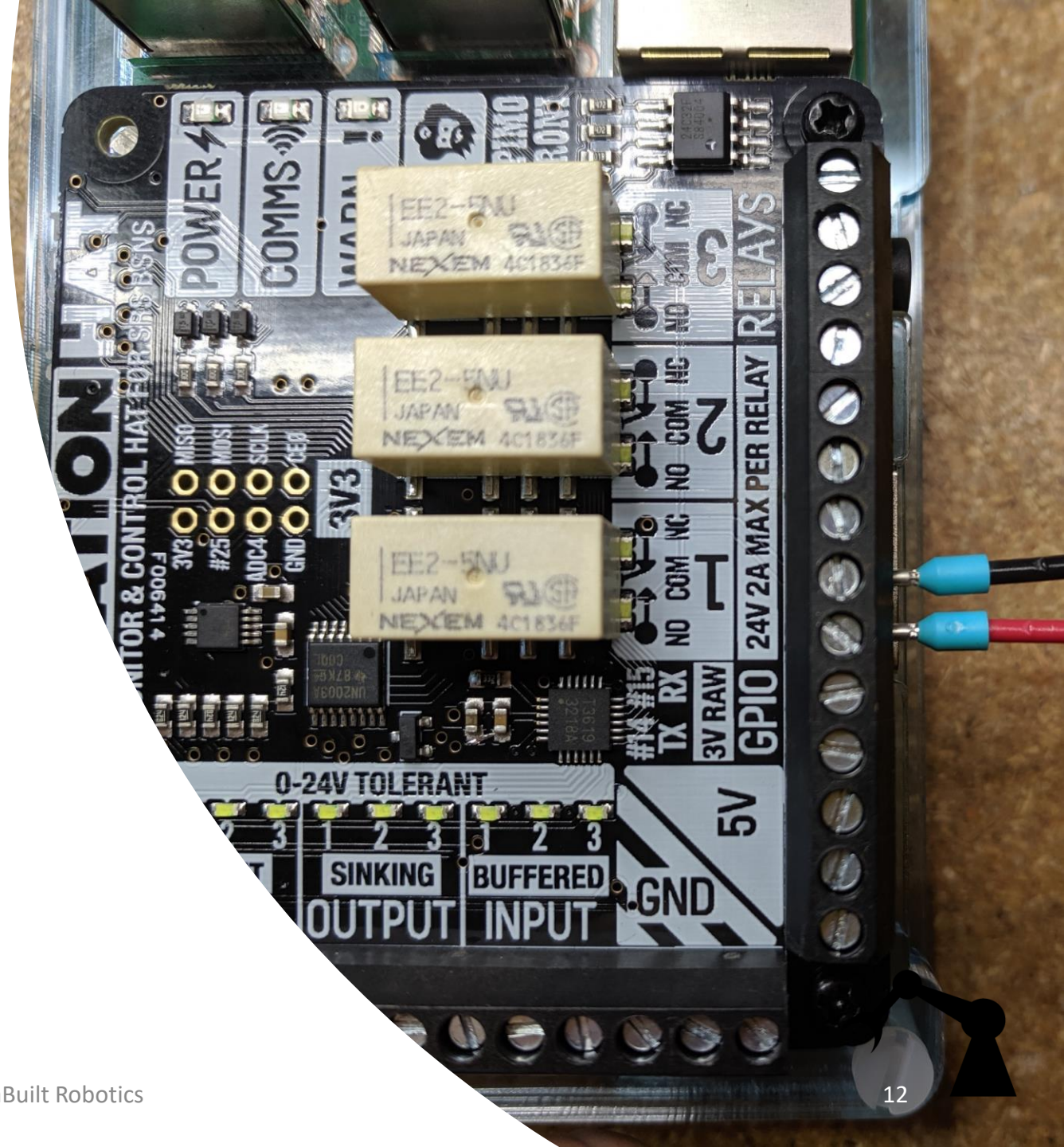
Connect Cycle Start Wiring to Haas CNC Controller

Connecting cycle start wires to Robot2CNC

Tools Needed:

- 1/16” flathead screwdriver

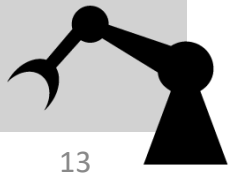
1. Locate relay 1 on the Robot2CNC
2. Using the flathead screwdriver, loosen the terminal marked NO and connect the red wire and tighten it down
3. Repeat the process for the black wire in the terminal marked COM



Install

Software on
CNC Controller

Setup Settings



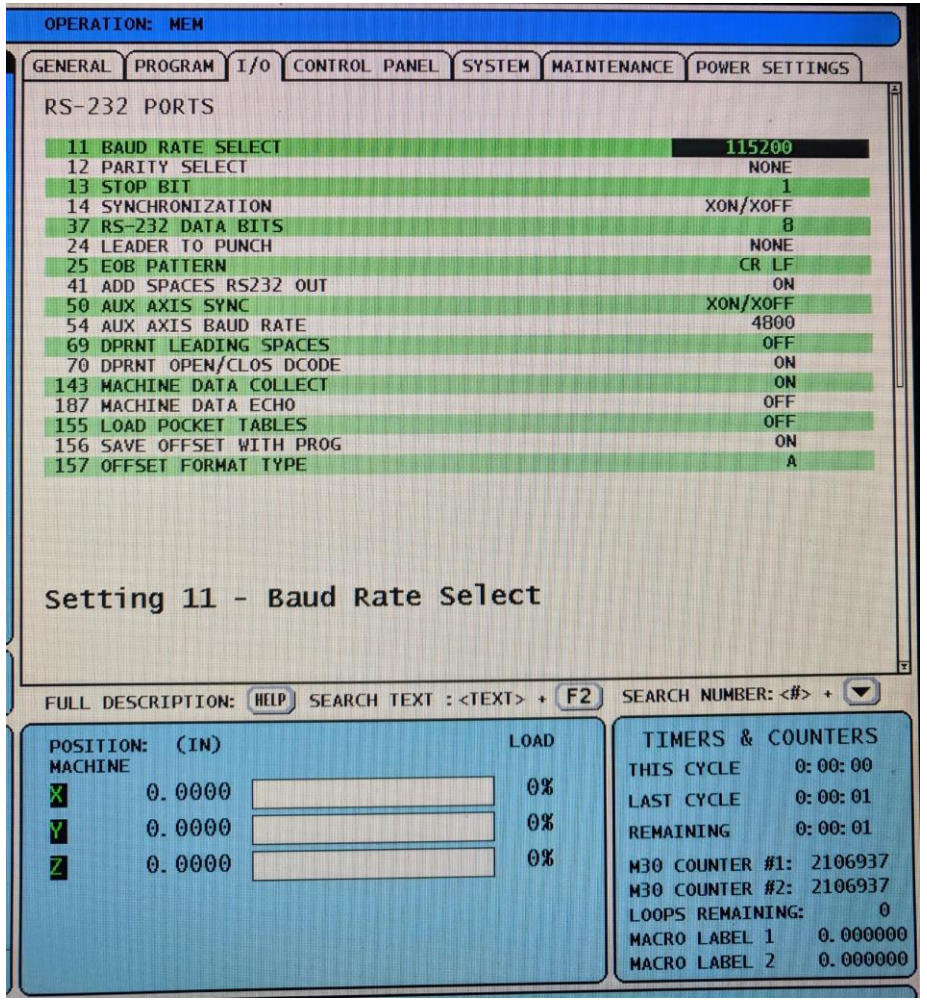
Install CNC Programs on to the Haas CNC Controller

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

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

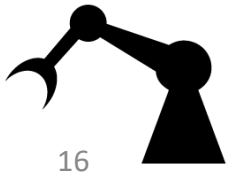
Configure CNC Settings

- Setting/Graphic >> I/O>> RS-232 Ports
  - Baud Rate Select - 115200
  - Parity Select - NONE
  - Stop Bit - 1
  - Synchronization - XON/XOFF
  - RS-232 Data Bits - 8
  - Leader to Punch - NONE
  - EOB Pattern - CR LF
  - Add Spaces RS232 Out - ON
  - AUX Axis Sync - XON/XOFF
  - AUX Axis Baud Rate - 4800
  - DPRNT Leading Space - OFF
  - DPRNT Open/Clos DCODE - ON
  - Machine Data Collect - ON
  - Machine Data Echo - OFF
  - Load Pocket Tables - OFF
  - Save Offset with Prog - OFF
  - Offset Format Type - A



Robot2CNC Setup

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



Configure CNC in Robot2CNC

- In the menu at the top left, select “CNC Configuration”
- Set Communication to Serial
- CNC Port: /dev/ttyUSB0
- Baud Rate: 115200
- Parity: None
- Data Bits: 8
- Stop Bits: 1
- Check X On
- Check X Off
- Command Macro Address: 890
- Parameter Macro Address: 891
- Click Submit to save any changes
- Use menu to switch to the “About” page and click “Restart”