CNC4PC THC-3 Plasma Torch Height Control User Manual

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Contents

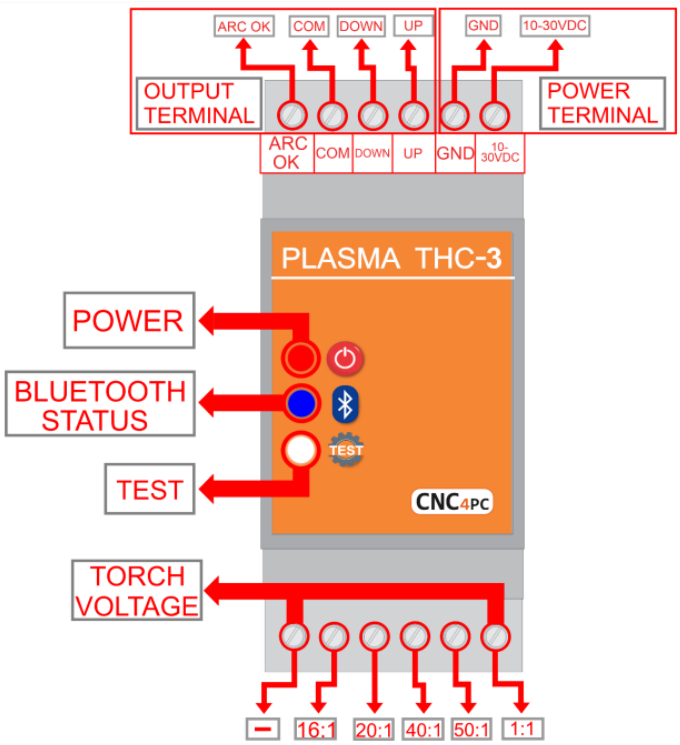
OVERVIEW

This module allows you to control the height of the plasma torch head relative to the workpiece during plasma CNC operation, it supports either raw torch head voltage or input of 0-10VDC, the ARC OK, UP and DOWN outputs are isolated.

FEATURES

- Open collector to optoisolated output working at 5 to 24VDC
- Built-in Voltage Divider for connecting to the voltage on the torch or can use the 0-10VDC from a voltage divider from the plasma.
- Bluetooth connection
- 10 to 30VDC Power Terminal (+24 Typical)
- Isolated Power Connection
- Status LED
- Din Rail Mountable.
- Divider input (16:1 – 20:1 – 40:1 – 50:1 – 1:1)

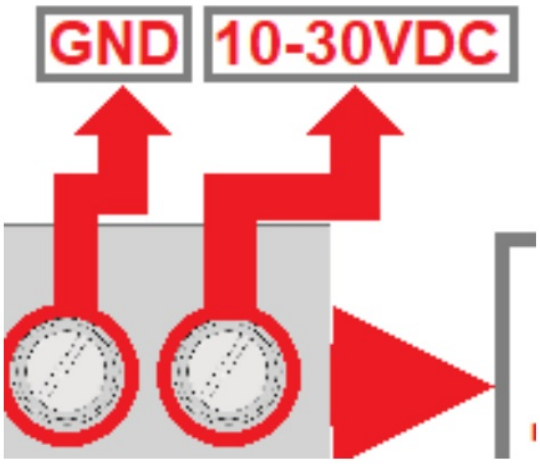
DESCRIPTION



TERMINAL BOARD

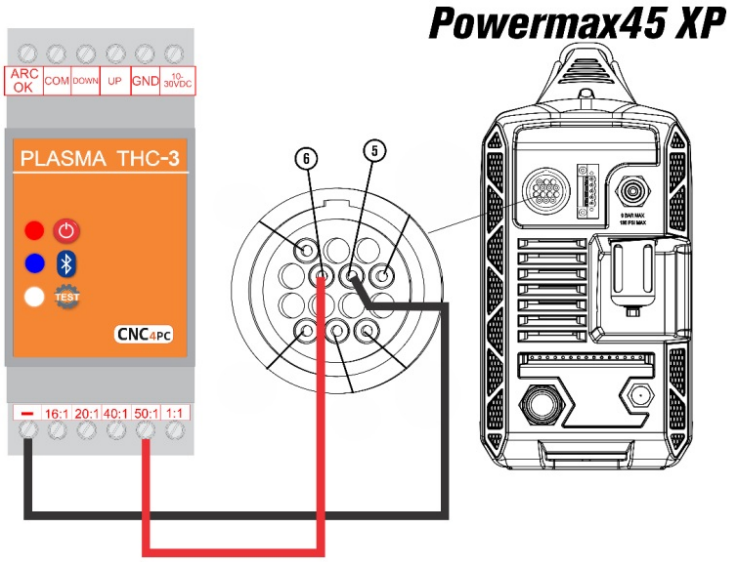
POWER

Requires a 10 to 30VDC at 100mA Power Supply. Typically, +24vdc are used. “This board is electrically isolated through a DC-DC converter.”

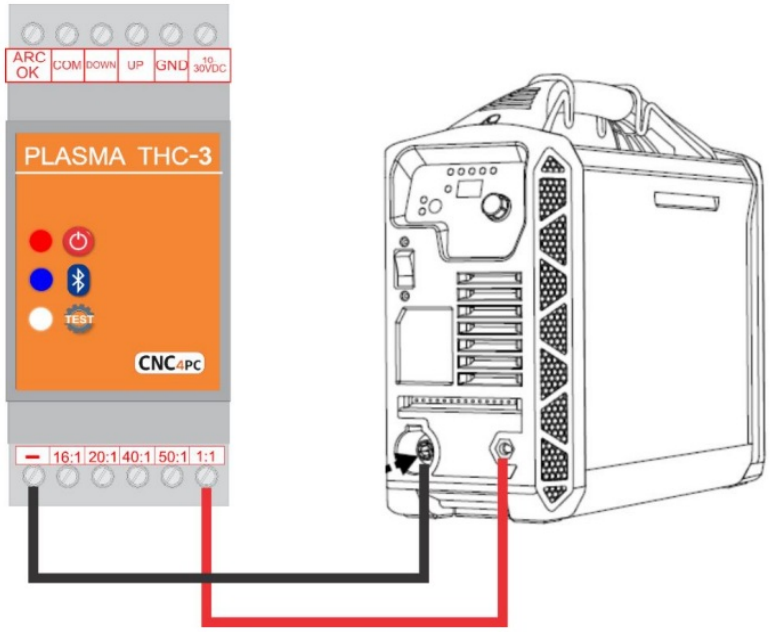


WARNING: Check the polarity and voltage of the external power source and connect the 10VDC to 30VDC and GND. Overvoltage or reverse-polarity power applied to these terminals can cause damage to the board, and/or the power source.

4.2 DIVIDED INPUT (16:1 – 20:1 – 40:1 – 50:1 – 1:1)



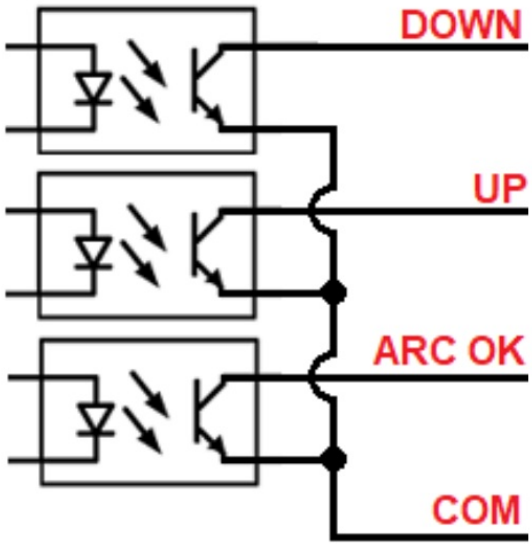
TORCH VOLTAGE



NOTE:
It is preferable to use the divided voltage instead of the torch voltage. The Torch voltage can be very high and there could be many safety implications in wiring this to the controller. The high voltage could also be a possible source of noise. Use it as a last resource.

OUTPUT SIGNALS

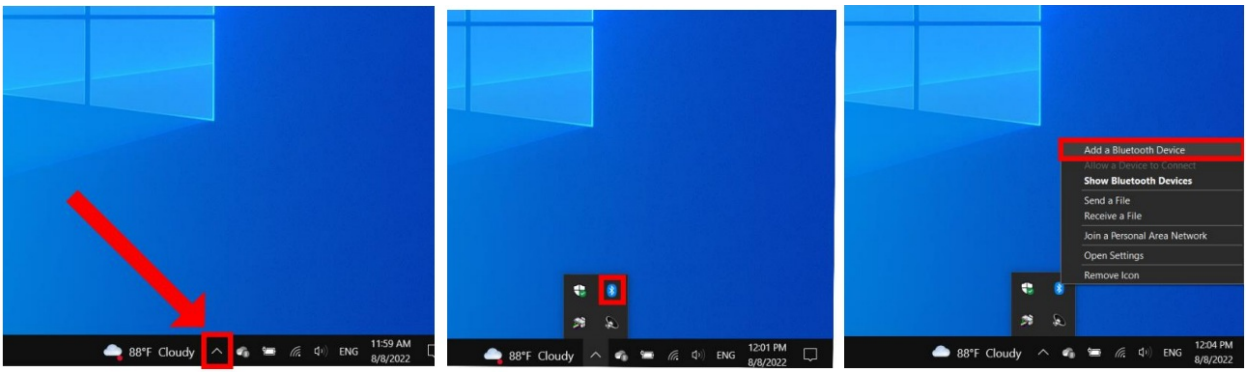
Voltage applied can be from 5 to 80VDC@50mA, outputs signal optoisolated Open Collector.

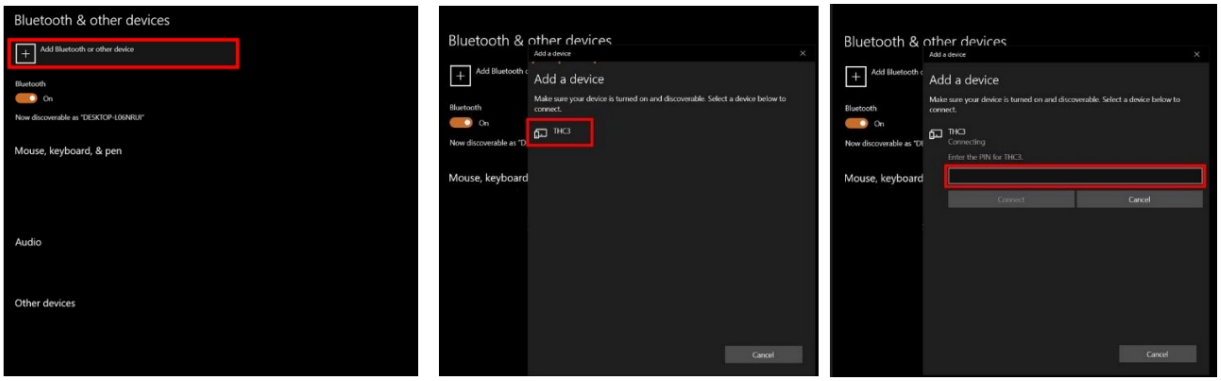


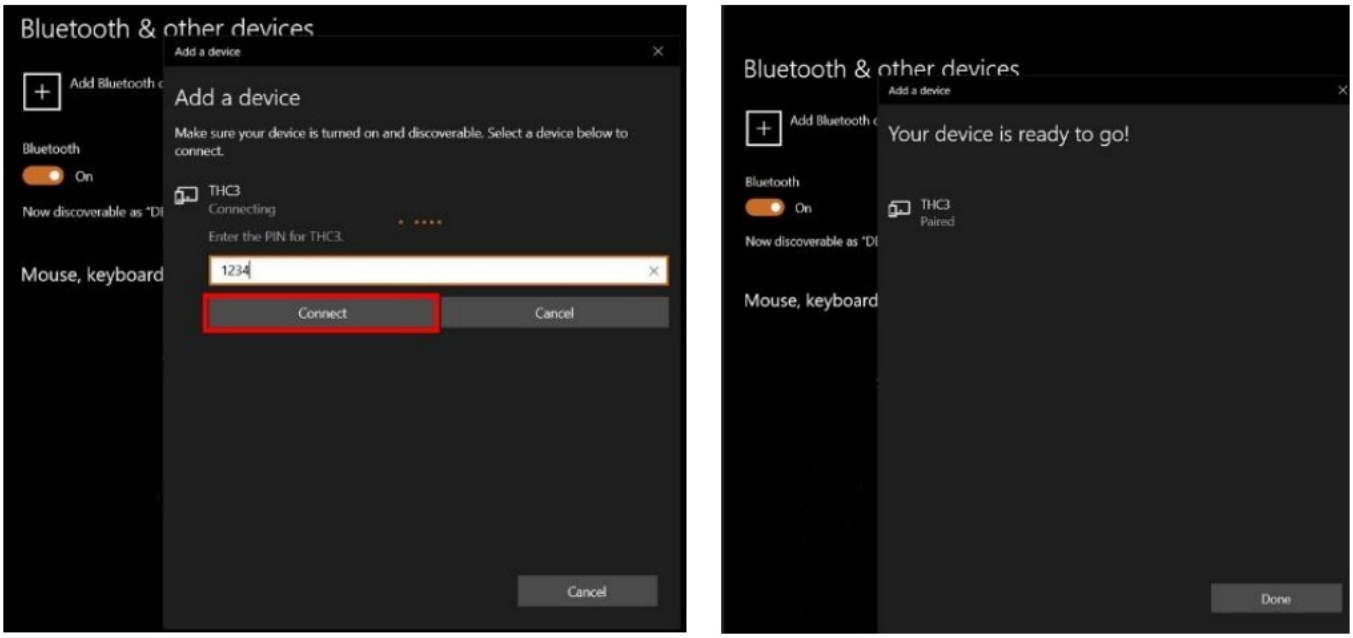
PAIRING DEVICE

Setting up a CNC4PC THC-3 Torch Height Controller UCCNC Configuration for THC-3

Add device THC-3







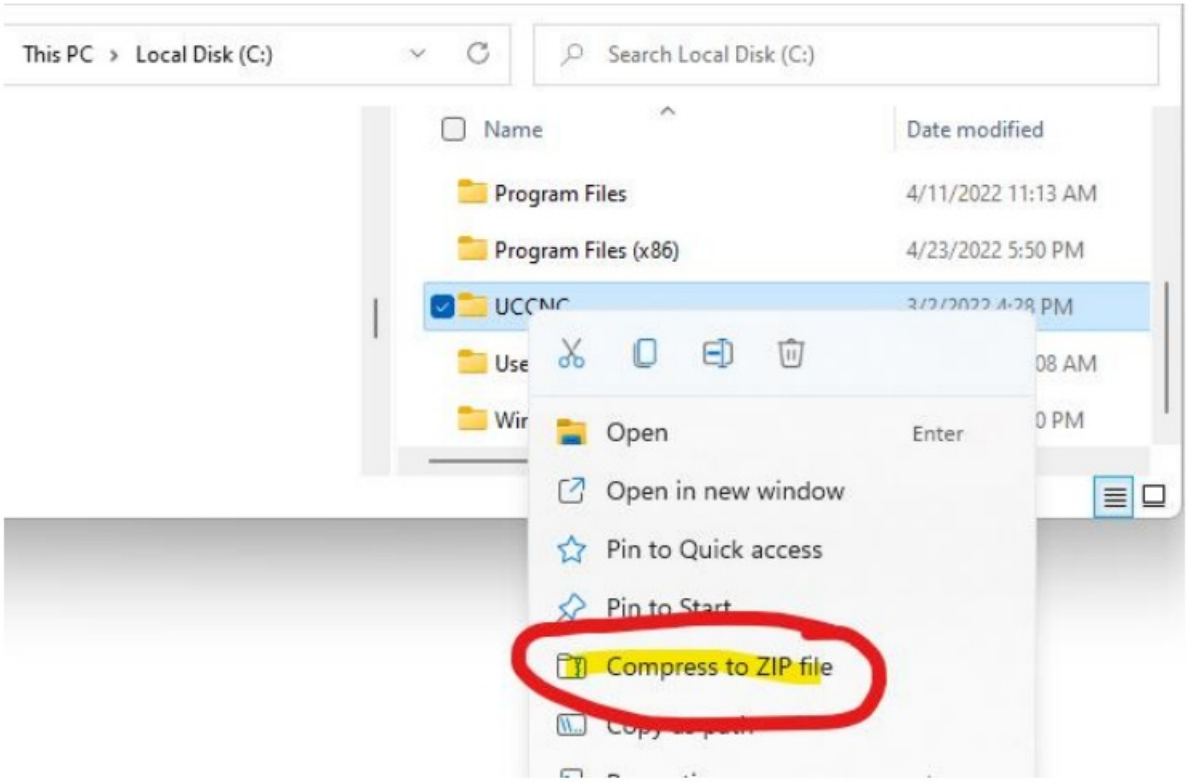
UCCNC CONFIGURATION

CCNC Configuration for THC-3 on C76 or C94
Used software: UCCNC Version 1.2115
http://www.cncdrive.com/UCCNC/setup_1.2115.exe

STEP 1:

Start by making a backup of the existing installation:

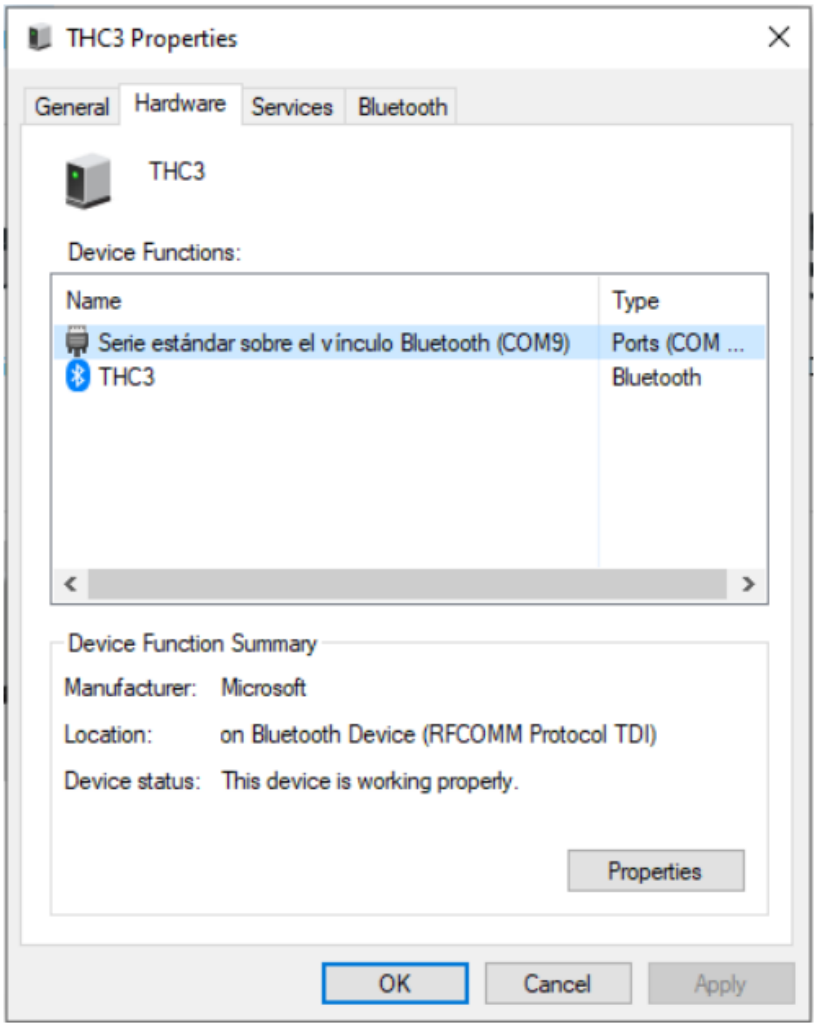
Make a backup of the configuration and file installation, we recommend creating a backup of the current installation by right-clicking in the current installation folder and zipping it.

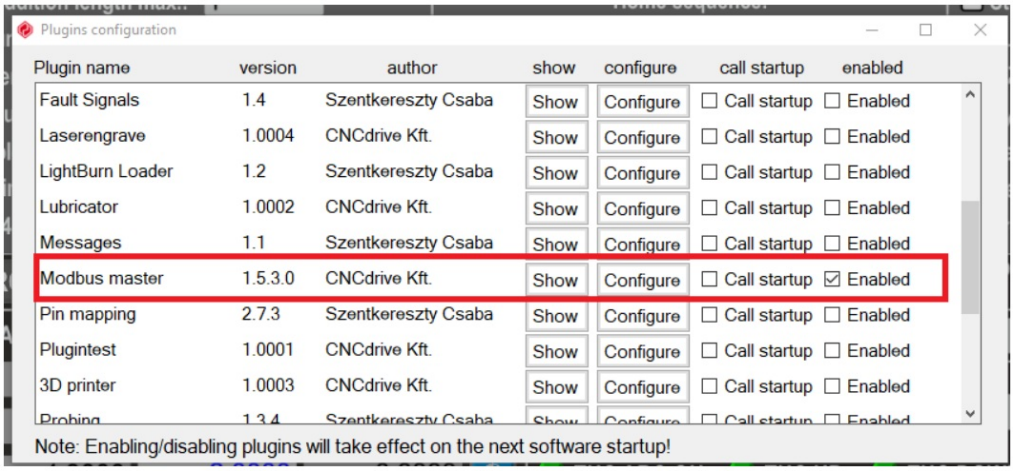


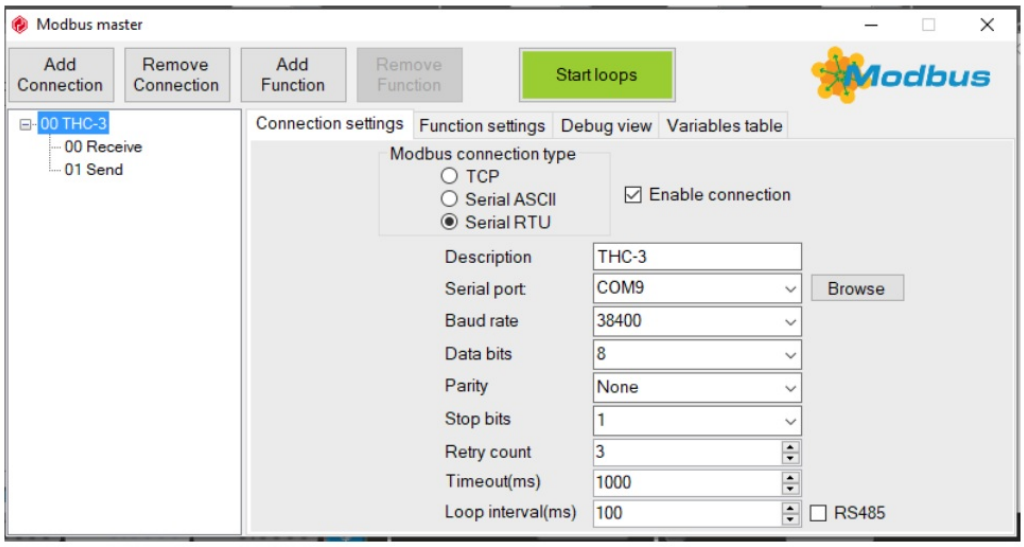
STEP 3:

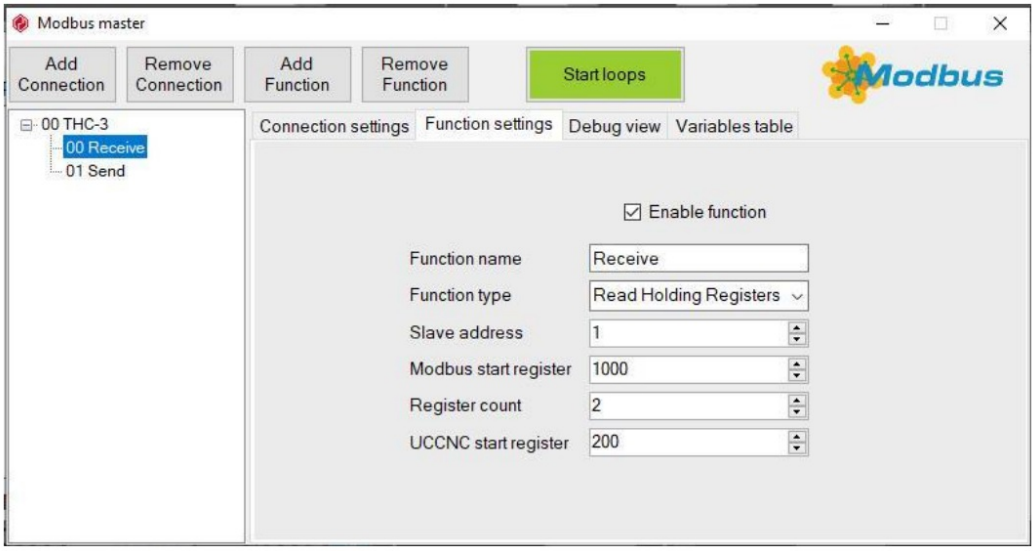
Modbus Configurations:
Control Panel\All Control Panel Items\Devices and Printers

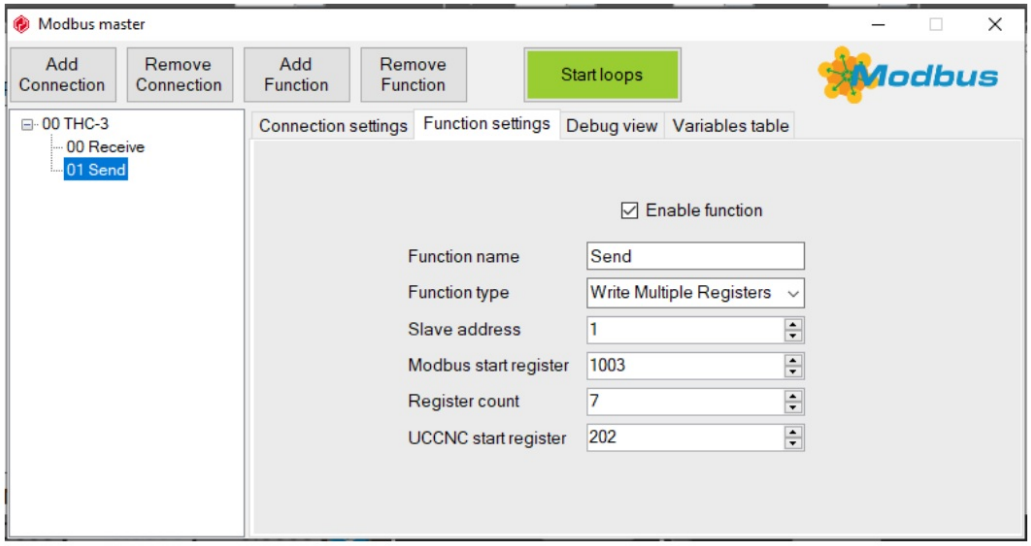
NOTE:
The COM port that windows assigned, as it would need to be set in the Modbus configuration.


THC3 Properties
General
Hardware
Services
Bluetooth
THC3
Device Functions:
Name
Type
Serie estándar sobre el vínculo Bluetooth (COM9)
Ports (COM ...
THC3
Bluetooth
Device Function Summary
Manufacturer: Microsoft
Location: on Bluetooth Device (RFCOMM Protocol TDI)
Device status: This device is working properly.
Properties
OK
Cancel
Apply


Plugins configuration
Plugin name
version
author
show
configure
call startup
enabled
Fault Signals 1.4 Szentkereszty Csaba Show Configure Call startup Enabled
Laserengrave 1.0004 CNCdrive Kft. Show Configure Call startup Enabled
LightBurn Loader 1.2 Szentkereszty Csaba Show Configure Call startup Enabled
Lubricator 1.0002 CNCdrive Kft. Show Configure Call startup Enabled
Messages 1.1 Szentkereszty Csaba Show Configure Call startup Enabled
Modbus master 1.5.3.0 CNCdrive Kft. Show Configure Call startup Enabled
Pin mapping 2.7.3 Szentkereszty Csaba Show Configure Call startup Enabled
Plugintest 1.0001 CNCdrive Kft. Show Configure Call startup Enabled
3D printer 1.0003 CNCdrive Kft. Show Configure Call startup Enabled
Note: Enabling/disabling plugins will take effect on the next software startup!







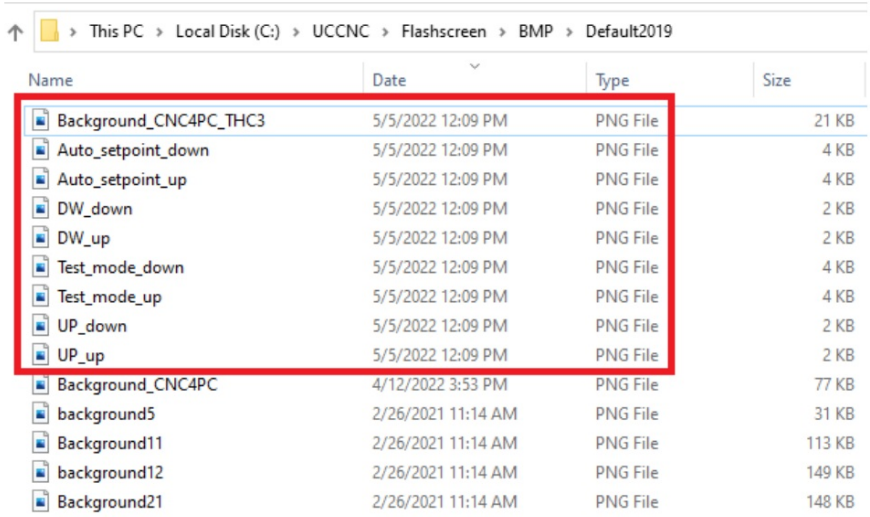
STEP 4:

Download, install and the new screen and macro files:
Download the compressed file containing the macros and screen that work with the macros:

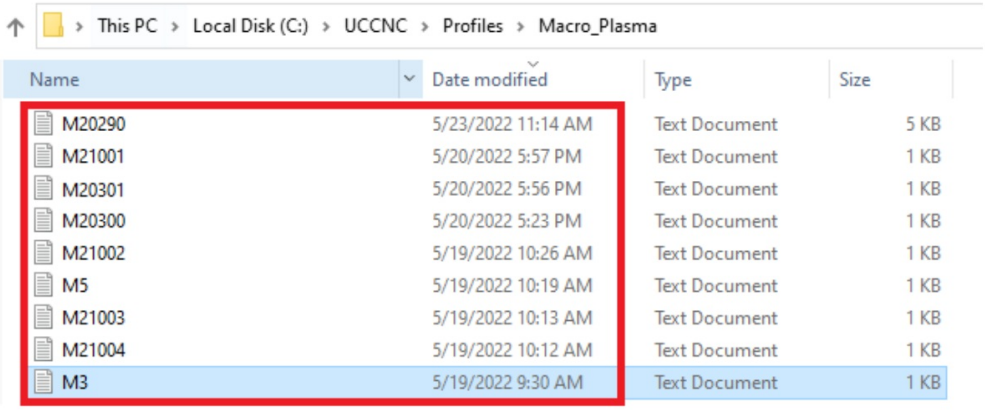
https://www.cnc4pc.com/pub/media/productattachments/files/UCCNC_THC-3_2.zip

You will need to install the screen found in the download folder and place the macro in the macros directory for the

profile folder.

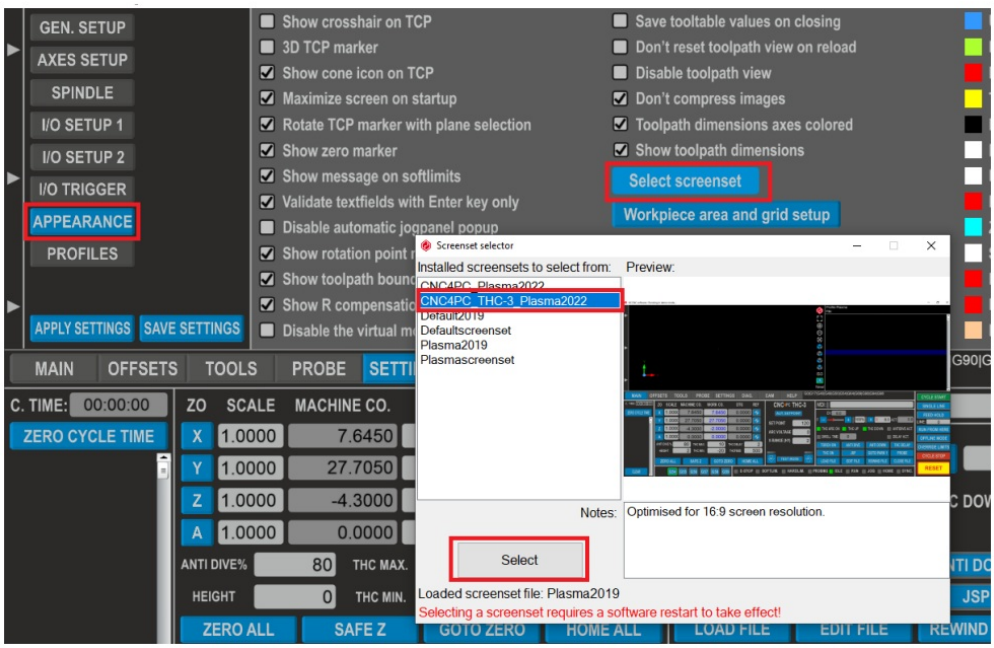


Make a backup of the original M3 and M5 macros by zipping them into the same folder, just so you may have access to the original macros if you need to revert the installation later. Then replace the M3 and M5 macros for the profile you are configuring:



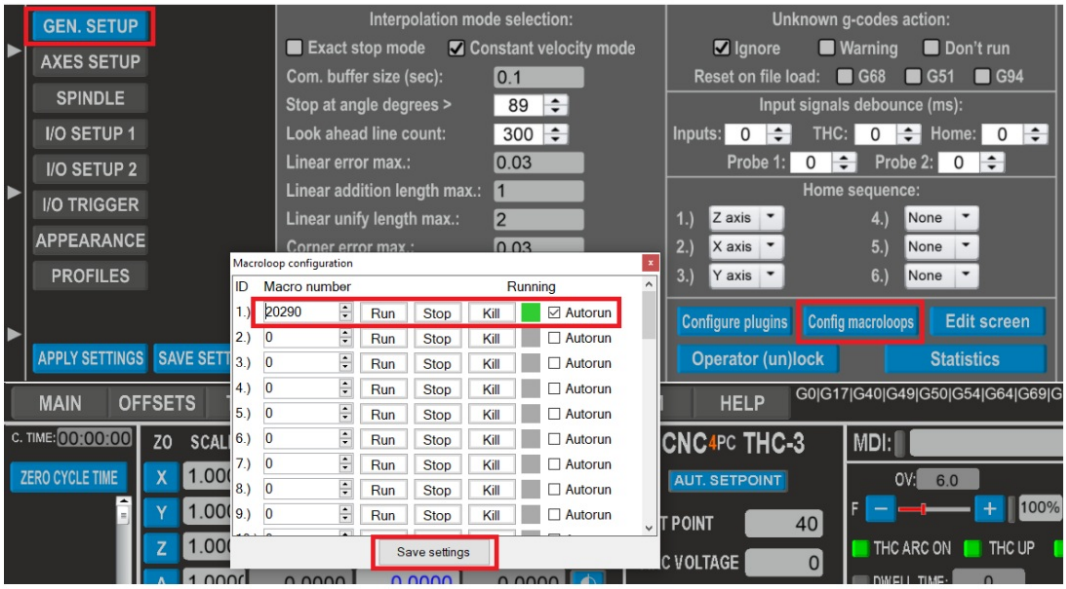
STEP 5:

Configure the new Plasma Screen:
Set UCCNC to use the new screen that you just copied:

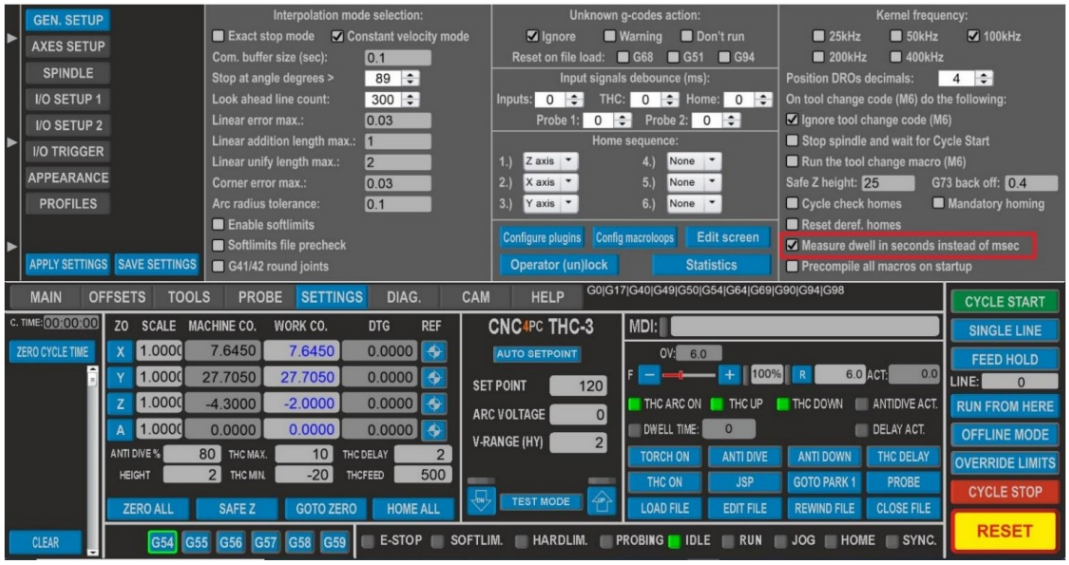


STEP 6:

Configure the macroloop:



STEP 7:

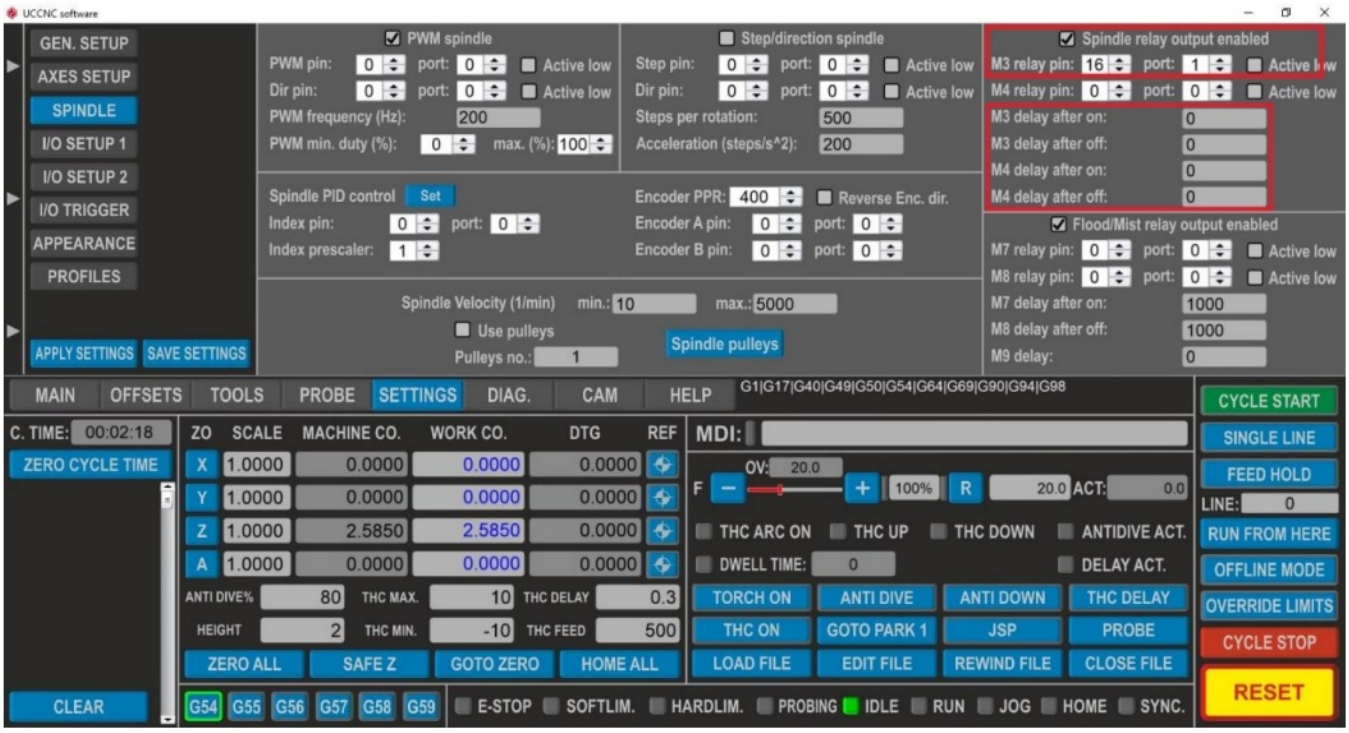


STEP 8:

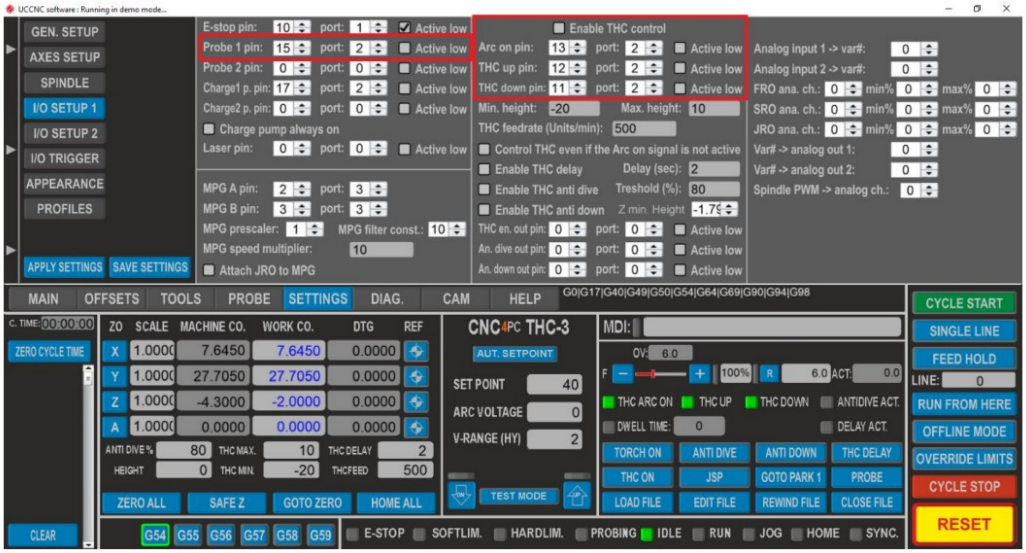
These wiring samples for connection can be used: https://www.cnc4pc.com/blog/post/connection-c76-and-thc-3-with-powermax-45

STEP 9:

Configure Torch Relay:



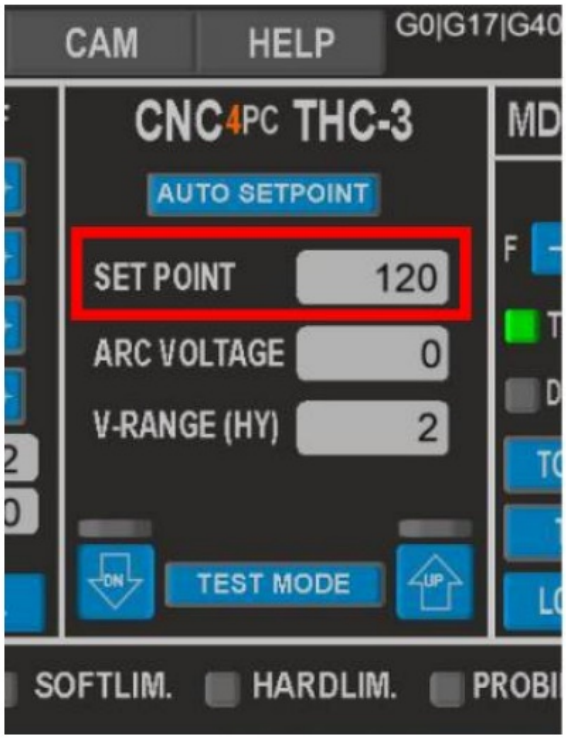
STEP 10:
Configure the THC pins:



SCREEN DESCRIPTION

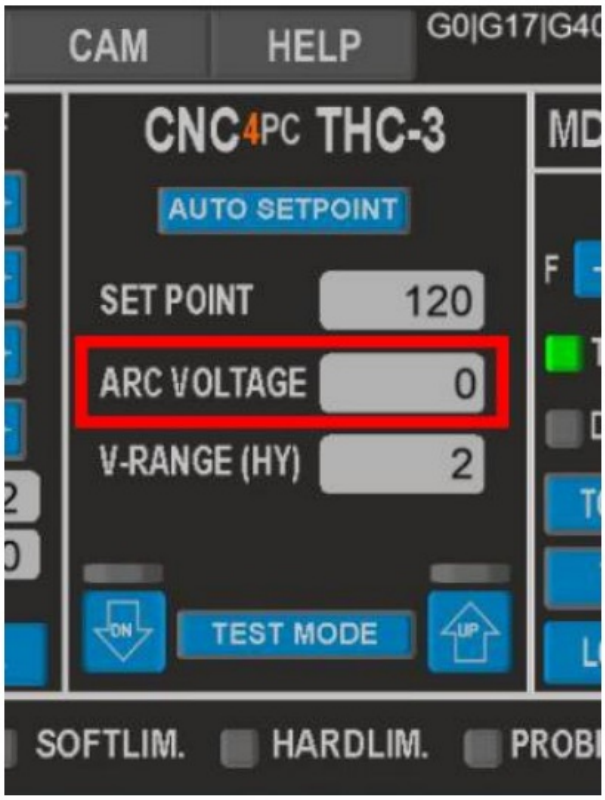
SET POINT

Is the target voltage to be achieved.



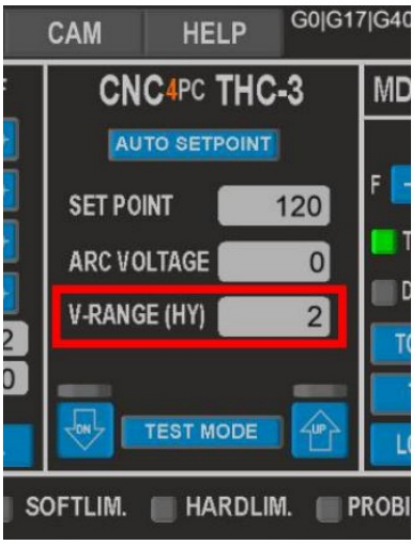
ARC VOLTAGE

Limit from 40 to 400VDC, True Voltage measured for the plasma.



V-RANGE (HY)

Is the tolerance or (+/-) voltage range used to generate an adjustment. The torch height is not commanded to adjust if the true voltage is within side the specified range. It can be between 2 to 32VDC.

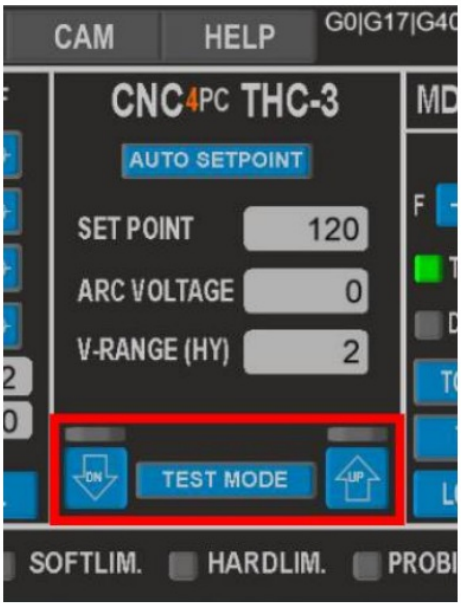


THC DELAY

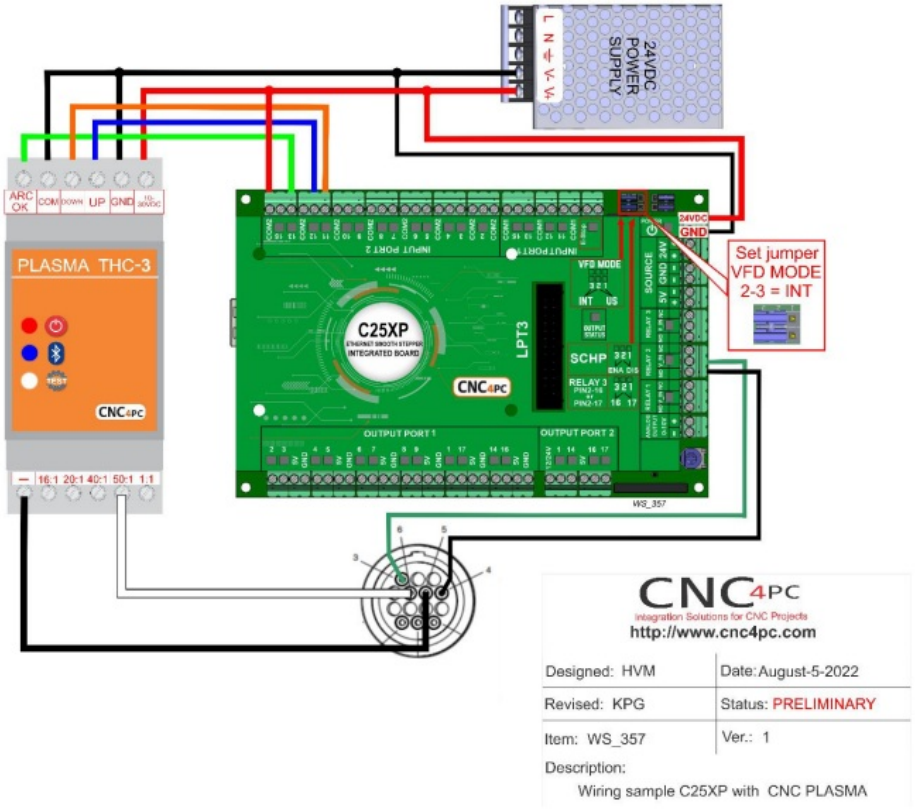
Torch motion starts the number of seconds you set as DT after the ARC signal is determined. This can be a value between 0.1 to 9.9 seconds.

TEST MODE

- Select test mode button on the screen, the test led will turn on.
- In test mode select DN or UP to make the spindle move. The LED will turn on according to the direction.
- To exit test mode, Press the test mode button again.
- Z-axis correction will start after the DT seconds you set after the ACR OK signal is sensed.
- Test Mode is to simulate the signals coming from the THC unit. This can be used to test the wiring and configuration to make the unit can read the signals sent.



WAIRING SAMPLE



THC-3 Plasma Torch Height		
TERMINAL	**WIRE CABLE**	**CONNECTION**
ARC OK		INP. PORT2 – PIN13
COM		GND
DOWM		INP. PORT2 – PIN11
UP		INP. PORT2 – PIN12
GND		GND
10 – 30VDC		24VDC

CONNECTOR	**RELAY 2**	**THC-3 DIVIDEDINPUT**
PIN 3	VIN	
PIN 4	NO	
PIN 5		GND
PIN 6		50:1

Disclaimer:
Use caution. CNC machines can be dangerous machines. Neither DUNCAN USA, LLC nor Arturo Duncan is liable for any accidents resulting from the improper use of these devices. This product is not a fail-safe device and it should not be used in life support systems or in other devices where its failure or possible erratic operation could cause.

CNC4PC
Integration Solutions for CNC Projects

Documents / Resources

	CNC4PC THC-3 Plasma Torch Height Control [pdf] User Manual THC-3 Plasma Torch Height Control, THC-3, Plasma Torch Height Control, Height Control

References

- cncdrive.com/UCCNC/setup_1.2115.exe