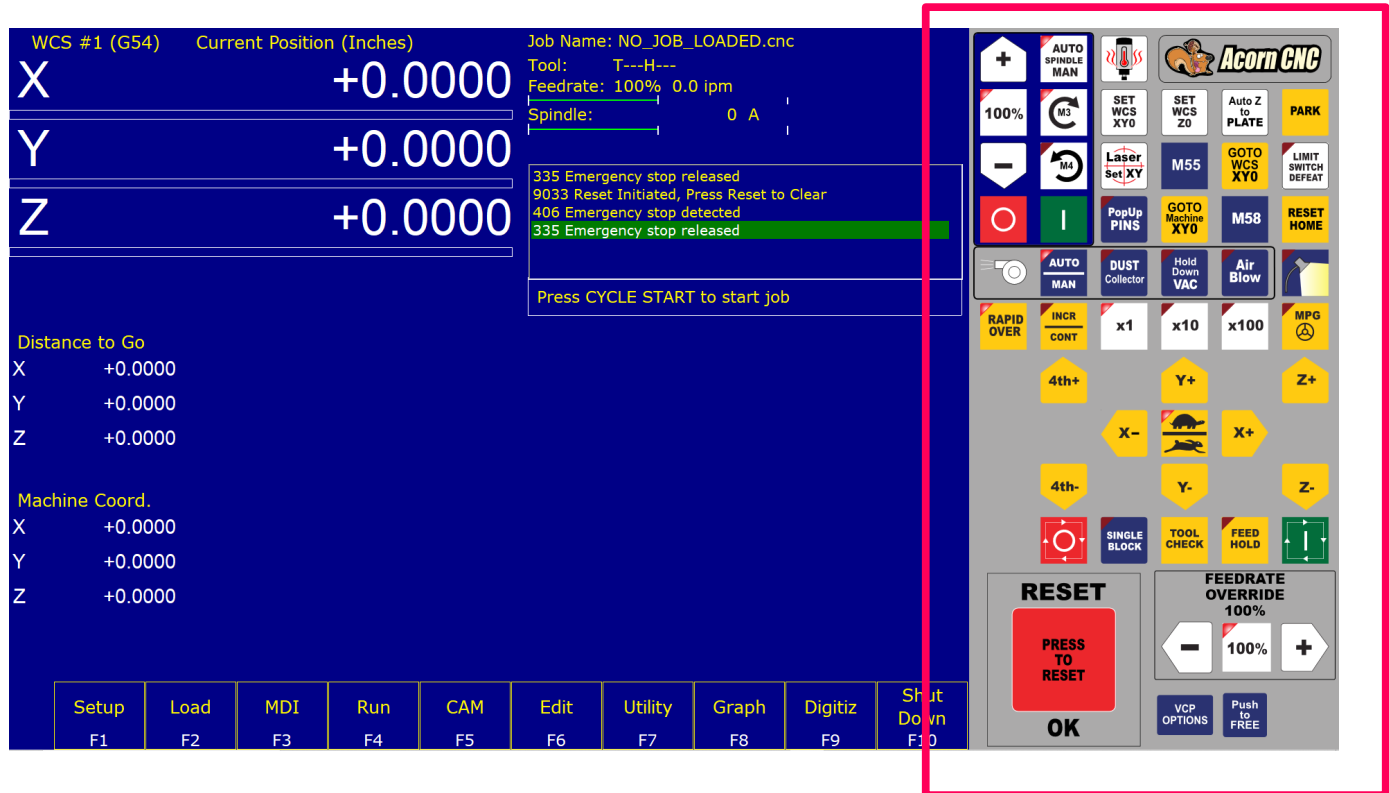


1.) CNC12 "Router" now is a selection in the installer.

The Router version of Acorn CNC12 is as the name implies geared towards CNC router applications with a preconfigured Virtual Control Panel (VCP) with common Router functions and features. The Router VCP and its related router macros are fully edited and customize-able. So user can use as is or further customize the function/feature to their liking.

CNC12 Router and CNC12 Mill CAN NOT be installed on the same CNCPC at the same time.

CNC12 Router CAN be installed on the same CNCPC at the same time as CNC12 Lathe



2.) PWM Output for Spindles and Lasers

a.) 5 volt PWM output signal is on DB25 pin# 14. (https://en.wikipedia.org/wiki/Pulse-width_modulation)

b.) DB25 pin# 14 is Output 2

c.) Output 2 is also connected to Relay 2 via the ribbon cable

d.) If PWM output is used, Relay 2 must be disabled. See schematic to cut ribbon cable lead to Relay 2. see schematic S15049

e.) PWM is based on 0-100 OR 0-1000 S command. User selects range 0-100 or 0-1000 in Acorn Wizard.

f.) M37 turns ON Laser Output, M38 Turns Laser output OFF: M37 will activate Laser Enable, Laser Reset, and PWM Select. After .5s will turn off LaserReset. At this point the laser controller will look at the PWM signal from OUTPUT2. M38 will wait 30s to allow JTECH laser controller to cool, then performs a M95 /37 /38 to turn off both Laser Enable and PWMSelect.

g.) PWM Velocity modulation feature adjusts the PWM output based on velocity of the machine tool so over-burning is avoided in the corners or turn arounds. G37 is used to turn ON and OFF PWM Velocity Modulation. G37 ON = PWM VM ON, G37 OFF = PWM VM OFF

h.) Simple PWM controls are located in the Acorn Wizard. In addition to “manual PWM controls”, preset buttons for common Jtech configurations are present and have matching schematics. (S15049,S15056,S15057)

PWM Setup

PWM Enable	<input checked="" type="checkbox"/> Yes
Base Frequency (Hz)	<input type="text" value="1000"/> (min value = 1, max value = 24,000)
Laser PWM S command range: 0-100 or 0-1000	<input type="checkbox"/> 0-100
PWM minimum S command power level to start Laser	<input type="text" value="5"/>
Inverse Output	<input type="checkbox"/> No

Common J Tech Laser Configuration Presets

Jtech Laser (Dedicated Laser Machine, No spindle motor)	<input type="checkbox"/> No
Jtech Laser with PWM BLDC spindle	<input type="checkbox"/> No
Jtech Laser with analog output AC spindle motor controlled by VFD	<input type="checkbox"/> No

PWM related i/o added to the Wizard.

a.) PWM Output: The PWM signal itself. Can only be used on Output 2 (Output 2 of DB25 pin#14) Related cnc code is the S command.

b.) LaserEnable: Typically used in a safety interlock circuit, see Jtech schematic S15049 as an example. Related M codes. M37 - Enables Safety Interlock and Resets Laser. M38 - Disables Safety Interlock after a delay to allow component cool down.

c.) LaserReset: Momentary output to Reset Laser. Used to send a reset signal to the laser controller, see Jtech schematic S15049 as an example

d.) PWMSelect: Output to move PWM signal from Spindle to Laser. PWMSelect is used when the PWM signal is required to be sent to different devices. For example a machine that has both a Spindle Motor and a Laser that require PWM to run. PWM from output 2 is connected to the COM of the relay PWMSelect is assigned to. To use with Standard Layout, Spindle PWM should be connected to NC side of Relay and Laser should be connected to NO side of relay. When PWMSelect is deactivated, PWM is being sent to Spindle. When PWMSelect is activated, the PWM signal is being sent to laser. Follow Schematic J-TECH Photonics Laser, BLDC Spindle Control #S15057

The screenshot shows the 'Router CNC Control Configuration Wizard' interface. On the left, a navigation tree includes sections for Primary System, Axis, Spindle, Touch Devices, Control Peripheral, DB25 Connector, and Preferences. The 'Output Definitions' sub-section under Primary System is selected. The main area displays a list of output functions, with 'LaserEnable', 'PWMSelect', 'LaserReset', and 'PWM Output' highlighted in a red box. To the right, a table titled 'Acorn Integrated Outputs 1-8' shows a mapping of output numbers to their definitions.

	Definition
1 OUT1	OUTPUT1
2 OUT2	OUTPUT2
3 OUT3	ChargePump
4 OUT4	OUTPUT4
5 OUT5	OUTPUT5
6 OUT6	OUTPUT6
7 OUT7	OUTPUT7
8 OUT8	OUTPUT8

Click and Drag an Output function definition from list to the Output number Definition box to assign a function to an output

CNC12 Acorn Version v4.62

- Fixed issue that would rarely and intermittently result in erroneous limit tripped messages introduced in rev12.
- Fixed issue when keyboard jogging is enabled you cant navigate the config menu.
- Eliminated auto insertion of suggested max rates in the Wizard axis config page, (out of range max rate warning message is still present).
- Fixed lathe tool auto measure X offset for ID Turn, ID Custom, ID Groove, FFace Turn, and FFace Bore
- Added an option in the Wizard and CNC12 to turn off warning that states "check if probe is functioning correctly" (Parameter 410)
- Added an escape button to DXF engraving menu

rev 12 Improvements

- Added clean filter message but now allow users to set the frequency date that it appears in the Wizard can be disabled by entering 0 value. (sets parameter 421) Under CNC Control Preferences in Wizard.
- Added RPM_Sensor Input for one pulse per revolution Spindle Speed indicator that uses an Input, typical use with Hall Effect sensors. (note: can not be used for threading, threading requires a spindle encoder, spindle encoder and RPM_Sensor can not be used at the same time. If you have an encoder installed CNC12 reads the spindle speed from the encoder and the RPM_Sensor is not necessary. RPM_Sensor is for machines without a spindle encoder but the user wishes to have a true spindle RPM readout within CNC12 and displayed on the main screen. In the Wizard input definitions menu.
- Added the ability for users to set charge pump divider Value in the Wizard. Default value is 96 which is compatible with G540 and is automatically set when G540 is selected. A 0 value disables the Charge Pump. Note: Charge Pump output works only on Output 3 of the DB25 connector and can only be assigned to Output 3 in the Wizard output menu. Under Advanced menu in Wizard.
- Disabled keyboard jogging while in the F3 CNC12 configuration menu to eliminate keystroke conflicts.
- Added sample laser gcode files to nfiles\laser along with Laser alignment test files.
- Lathe: Added ability for users to choose the Default Lathe operating mode. Feed per minute (G98) or Feed per Revolution (G99) G99 requires a spindle encoder while G98 does not. Lathe Wizard Spindle setup menu.
- Increased beta count down timer message to start at 45 days
- Improved M44, "Auto Z to Plate" VCP button to read probing values set be the Wizard to reduce user initial setup steps.

Fixes

- Fixed typo in the backing up of the cnc1 folder during install
- Fixed CNC12 not reflecting edited g-code until after restarting CNC12 or reloading the program
- Fixed Router Wizard VCP jog state on start up not taking.

Notes from previous revs that are included in subsequent revisions as well.

Fixes

- Fixed Chuck and Collet Logic not resetting correctly causing issues with spindle.
- Fixed Lathe gang / front / rear wizard setting not 'sticking'
- Fixed rear mount TT cycles bug
- Fixed UI issues with the preview gcode feature, like hiding it when going into the mdi and run job menus, and unhide it when going back to the main menu
- Fixed bug in the vcp were plc memory wasn't able to be used to set LED state
- Fixed saving issue for mill param 43 in the wizard
- Fixed problem with Skinning API CSR SetAngle and GetAngle functions which always failed
- Fixed issue on Mill and Router versions were if TT and Z-Ref is set you can't measure the Z axis in the part menu, because of an error message saying probe is not setup
- Fixed the part menu flashing if the probe is unplugged
- Fix for issue where a report could not be restored

Improvements

- Created new "Router" VCP ,Wizard and CNC12
- added ZriHomingAll input to the Wizard
- added Beta software count down timer
- added ESC key to Probe Bore menu
- sorted all wizard inputs and output definitions alphabetically
- reworded the warning error for db25 disabling custom mapping to be more user friendly
- change name of low air pressure inputs to low pressure to eliminate the word Air as they can be used for any number of pressure sensors not just for air, functionality of the inputs are the same, just a name change
- name change of MPG macros from PLCmacro1,2,3,4 to MPGmacro1,2,3,4 functionality is same, just a name change
- implemented new DXF import library so DXF import in intercon is compatible with a wider variety of DXF files. Note: Intercon accepts line and acrs. Any DXF file with curves will not work with intercon, if your dxf file has curves, convert all curves to lines and arcs before importing into intercon.
- reactivated the "DXF in" feature of Intercon
- Implemented FootPedal Input for Chuck Open/Close
- Added a category for Safety related PLC Functions in Input and Output Definition pages in the Wizard
- Added a notification during installation to backup current cnc12 dir for the user
- Added a warning message on the cnc12 main menu like the smoothing message, but to tell the user that m37 is active
- Acorn analog out 0-5 selection in Wizard and CNC12 parameter support for same
- WCS Table Lock Unlock check boxes beside WCS table in WCS menu
- improve Keyboard Jogging to eliminate keystroke conflicts in certain cnc12 menus
- Added PLC Function WorklightRouter
- Added a PWM setup page in the wizard
- Added J-TECH Related PLC Outputs and Macros for Router and Mill
- displaying the first 11 lines of code when you Load a G code Job.
- Gang tooling configuration selection in lathe wizard.
- Complete PWM output for Acorn via DB25 connector (for Laser power and DC motor speed controller command)
- Reference PLC Variables in G Code by Name
- Replace Wizard Rigid Tapping pop up window with a proper Wizard configuration page.
- Changed PLC Function RouterAirBlow to AirBlowNozzle
- added ability for keyboard jogging to be active when cnc12 starts. (users will not have to press Alt-J to activate keyboard jogging)
- change wording on Z part zero mill/router menu to remind users to enter the tool number they are using
- added sample laser files along with test pattern files to Mill and Router ..ncfiles\laser

Note:

- G64 Smoothing is not compatible with PWM output for lasers. Do not use the G code smoothing feature and PWM Output at the same time for laser applications.