

Input Wizard Name	Description / Purpose	Related M codes or macros	Notes:
CycleStart2	input for 2 nd external button, (same action as button on VCP with same name, user can use either button)		
FeedHold2	input for 2 nd external button, (same action as button on VCP with same name, user can use either button)		
CycleCancel2	input for 2 nd external button, (same action as button on VCP with same name, user can use either button)		
ToolCheck2	input for 2 nd external button, (same action as button on VCP with same name, user can use either button)		
FirstAxisDriveOk	Individual Drive Fault input for each axis. FirstAxisDriveOk, SecondAxisDriveOk, etc.. add corresponding drive fault message "X axis drive Fault", "Y axis drive Fault" etc..		Individual DriveOk Signals, On (Green) = Good, Off (Red) = Fault
ToolUnclampButton	Input for External button that when pressed activates the “ToolUnclamp” output. When input is made, ToolUnclamp output is energized.	Input fo external Tool Unclamp Button , these are typically mounted on the spindle for manual tool changes. Press the button and the tool is released from the spindle. This button is deactivated when running a job.	
VFDZeroSpeed	Input from VFD to confirm that spindle has stopped. Used in G code and Tool change macros.	M100 or M101/5000X where X in the input number	PLC can be modified to issue message if desired.
VFDUpToSpeed	Input from VFD to confirm that spindle has reached the specified speed. Used in G code and Tool Change macros	M100 or M101/5000X where X in the input number	PLC can be modified to issue message if desired.
SpindleTempAlarmMessage	Input for Temperature Alarm, issue message when input is Active, finishes current G code job (does not stop current Job that is running).		works just like low lube....issues warning message, continues to run until job is complete
SpindleTempAlarmStop	Input for Temperature Alarm, Issues Estop condition when input is active.		Issues a message Estop condition when input is active.
AirPressureLowMessage	Input for Low Air Alarm, issue message when input is Active, finishes current G code job (does not stop current Job that is running).		works just like low lube....issues warning message, continues to run until job is complete

AirPressureLowStop	Input for Air supply pressure sensor, Issues Estop condition when input is active.		Issues a Message and Estop condition when input is active.
DrawBarReleased	An input that is typically used on ATC router spindles. Input is active when Draw Bar/Pull Stud is active indicating that the tool is released from the spindle.		Displays message that "Draw Bar is Released" when input is active, then follow up message when input is inactive. "Draw Bar Clamped". Is treated same way as ToolisUnclamped logic wise. ToolisUnclamped and DrawbarReleased are not selectable at same time.
ZriHomingAll	Input used for all Zri (index pulse) homing. M105 /X P(ZriHomingAll input number) F3 ;Move X plus at 3ipm until input 4 closes	cncm/t.hom	
SafetyDoorSwitichClosed	Input used for machine tool safety, typically a door switch but could also be used for other safety device input		P985 =1 allows slow jog with door open, P985=2 Does not allow any movement with door open.
SafetyDoorLockConfirmed	Input used for machinetool safety, typically for a switch with a locking mechanism.		
HomeAll	A single input for all Home switches for automatic homing of all axes. The recommended homing method for Acorn.	Cncm.hom, cnct.hom	Related VCP buttons: Reset Home, cycle start
LimitAll	An optional single input for all limit switches for over-travel protection above and beyond software travel limits.		Related VCP buttons: Limit Override
FirstAxisHomeOk	Used as an alternative to HomeAll. Home switches for each axis are wired into a dedicated input.		Uses up inputs unnecessarily, Use HomeAll instead. Only used in special cases where the Home Switches can not be wired in series or parallel.
SecondAxisHomeOk			
ThirdAxisHomeOk			
FourthAxisHomeOk			
FirstAxisHomeLimitOk	Special Case: Used when it is desired to have one switch perform both the homing and limit functions.		Uses up inputs unnecessarily, Use HomeAll, LimitAll, and Software Travel Limits instead. Only used in special cases where the Limit Switches can not be wired in series or parallel. Or it is desired to have individual inputs for each switch. Used in conjunction with OPTIONAL FirstAxisMinus(or Plus)LimitOK for the over-travel limit switch. opposite. (The recommended method is to use HomeAll and then Optional LimitAll see schematic S14954)
SecondAxisHomeLimitOk			
ThirdAxisHomeLimitOk			
FourthAxisHomeLimitOk			
FirstAxisMinusLimitOK	Special Case: Used for an individual limit Switch.		Uses up inputs unnecessarily, Use LimitAll instead. Only used in special cases where the Limit Switches can not be wired in series or parallel. Or it is desired to have individual inputs for each switch. Use Software Travel Limits instead.
FirstAxisPlusLimitOK			
SecondAxisMinusLimitOK			

SecondAxisPlusLimitOK			
ThirdAxisMinusLimitOK			
ThirdAxisPlusLimitOK			
FourthAxisMinusLimitOK			
FourthAxisPlusLimitOK			
DriveOK	An input coming from the Servo Drive to let Acorn know that there are no faults from the Drives		
BackGear	An input from a switch. that indicates the position of the "back gear" on a milling machine head.		
LubeOK	An input from a Lube pump low lube indicator		
SpindleOk	An input coming from the Spindle VFD to let Acorn know that there are no faults from the VFD.		
SpindleLowRange	An input from a switch. or the VCP button with same name that indicates the position of the spindle gear Range.	M41 select Low Range	
SpindleMedRange		M42 select Med Range	
SpindleHighRange		M43 select High Range	
ChucksOpen	An input from a switch. that indicates the position of the chuck		
ChucksClosed	An input from a switch. that indicates the position of the chuck		
SpindlesOriented	An input from a VFD orient card which indicates that the spindle is oriented. Typically used for ATC's		
ToolsUnclamped	Input used with a sensor to verify that the tool is actually unclamped, typically used with ATC spindles.		Is treated same way as DrawBarReleased logic wise. ToolsUnclamped and DrawbarReleased are not selectable at same time.

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Output Wizard Name	Description / Purpose	Related M codes or macros	Notes:
UnclampTool	Output that activates to release a tool from an ATC spindle. Typically used to control a Air solenoid. Typically output is Active for release. Not active for tool clamped.	M15/M16	
TailStockInOut	Output that is typically used to activate air solenoid to move a Lathe TailStock In or Out. SPDT relay can be wired either way.	M32, M33	M32 Turns on TailstockInOut, will stay on unless m33 is issued, even through resets and Faults
VfdEnable	Output used to enable a VFD. Lets VFD know that it is good to go.	M3/M4/M5	Used in conjunction with VfdDirection. see schematic #S15009 for wiring example.
VfdResetOut	Output used to reset a VFD after a fault.		Output is Active (Green) with Physical Estop depressed (Estop condition from the actual Estop button input). Output is inactive (RED) when Estop is released.
VfdDirection	Output to activate when motor direction is commanded to reverse. For support of SPDT VFD to Relay connections just like Allin1DC and Oak. See chuck for more info.	M3/M4/M5	VCP spindle CW/CCW buttons.
DustFootActivate	Output to control (on/off) dust foot		Requires Macro, M94/28. (Note: Example use contained in M57 & M58)
LaserAlignActivate	Output to control (on/off) cross hair material alignment laser marking		Requires Macro, M94/29. (Note: Example use contained in M57 & M58)
AirBlowActivate	Output to control (on/off) air blow solenoid	M15	Activates with UnclampTool
RouterDustCollection	Output to control (on/off) Dust Collection motor thru relay or contactor	M8	Works exactly like Flood, uses M8/M9 and uses same button on the VCP as Flood. Cant assign Flood and Dustcollection at same time.
RouterVacuumHoldDown	Output to control (on/off) material Vacuum hold down typically air solenoid	M7	Works exactly like Mist, uses M7/M9 and uses same button on the VCP as Flood. Cant assign Mist and Dustcollection at same time.
PopUpPins	Output to control (on/off) material alignment pins typically air solenoid.		Requires Macro, M94 (Note: <i>Example use in M55 & M56</i>)
SpindleCooling	Output to control (on/off) spindle cooling, typically a fan		Requires Macro, M94 (Note: <i>Example use in</i>

	or water pump		M55 & M56)
SpinFWD	Used to command a VFD or relay	M3, M5	
SpinREV	Used to command a VFD or relay	M4, M5	
NoFaultOut	Output that is primarily used to control an Estop contactor		Output is active when there are No Faults with the CNC System. Output is inactive during an estop condition. (an Estop condition can be triggered by many things)
DriveResetOut	Output that is primarily used to reset a servo or stepper drive after a drive fault condition.		Output is Active (Green) with Physical Estop depressed (Estop condition from the actual Estop button input). Output is inactive (RED) when Estop is released. Requires a physical estop button to work, the Reset button on the VCP is not an Estop.
LubePump	Output used to turn on and off a lube pump.		See Centroid Operator manual chapter 15 for info on Parameter #179 to change the way this output functions to match the type of lube pump being used.
SpindleBrakeRelease	Output used to energize a brake release, energizes when spindle is commanded to spin	Parameter #990 sets the delay timer in milliseconds. Default is 250 milliseconds (a quarter of a second)	
Flood	Used to control a VFD or relay for a flood pump	M8 Flood ON, M9 Flood Off	
TurnClampOn	Output to control (on/off) material hold down clamps, typically an air solenoid or a Spindle Clamp	M10 Clamp ON, M11 Clamp Off	Can Also be used for a Spindle Clamp on/off or any other general clamp use.
WorkLight	Simple output used to turn on a worklight, works in conjunction with the Worklight VCP button.	Worklight defaults to ON when control is powered up, use the VCP worklight button to turn the work light ON and OFF.	
G540SpinRevOff	Used with GeckoDrive G540 in Legacy mode, not recommend. Use G540 in "Drive Only" mode. See schematic # 14979 for recommend G540 hookup		
G540SpinFwdOff			
Mist	Used to control a solenoid or relay for a mister	M7 Mist ON, M9 Mist Off	
MillVacuumOn	An output typically used for Vacuum Hold down ON/OFF	M33 activates output to start Vacuum. M34 turns vacuum off.	
MillDustCollectionOn	An output typically used for Dust Collector control.	M35 activates output to start Dust Collector. M36 turns Dust Collector Off.	
OpenChuck	Used to control a solenoid or relay to open a chuck on a Lathe	M10	Parameter 992 is timer (ms) for Turnoff or Fault if ChuckIsOpen Input is selected. M10 Turns on

			OpenChuck, Turns off when timer or Input is seen. M10 Turns off M11
CloseChuck	Used to control a solenoid or relay to close a chuck on a Lathe.	M11	Parameter 992 is timer (ms) for Turnoff or Fault if ChuckIsClose Input is selected. M11 Turns on CloseChuck, Turns off when timer or Input is seen, M11 Turns off M10
Output1	General Purpose output, can only be assigned to Output number with same number.	M61 activates Output1 M81 deactivates Output1	User editable M codes so it is easy to modify for any kind of use. M89 will turn off those outputs all at once
Output2		M62 activates Output2 M82 deactivates Output2	
Output3		M63 activates Output3 M83 deactivates Output3	
Output4		M64 activates Output4 M84 deactivates Output4	
Output5		M65 activates Output5 M85 deactivates Output5	
Output6		M66 activates Output6 M86 deactivates Output6	
Output7		M67 activates Output7 M87 deactivates Output7	
Output8		M68 activates Output8 M88 deactivates Output8	
CutOff	Used to control a solenoid or relay to activate a Cutoff tool on a Lathe	Parameter 995 is timer (ms) for Turnoff or Fault if Cutoffisdown Input is selected, M13 Turns on Cutoff, Waits for input or timer, turns off Cutoff, M14 is optional turnoff	
PartChute	Used to control a solenoid or relay to activate a part chute on a Lathe	Parameter 994 is timer (ms) for Turnoff or Fault if PartChuteIsIn Input is selected, M22 Turns on Partchute, Waits for input or timer, turns off	

		Partchute, M23 is optional turnoff	
Axis1BrakeRelease	Individual Output used to control an individual Axis Brake. Brakes are typically an electromechanical brake. Activates with Estop condition, deactivates with axis motor movement. Can be used with external brakes or 'brake motors'		When Axis is Powered, Brake is Released (Green). Estop/Fault applies brake (Red), M93 Releases power (brake ON Red)
Axis2BrakeRelease			When Axis is Powered, Brake is Released (Green). Estop/Fault applies brake (Red), M93 Releases power so brakes (Red)
Axis3BrakeRelease			When Axis is Powered, Brake is Released (Green). Estop/Fault applies brake (Red), M93 Releases power so brakes (Red)
Axis4BrakeRelease			When Axis is Powered, Brake is Released (Green). Estop/Fault applies brake (Red), M93 Releases power so brakes (Red)
UnclampTool	Output used to release the tool drawbar to unclamp the tool.	M15 unclamps tool M16 reclamps tool	Also Activated by ToolUnclampButton Input
OrientSpindle	Used to send output signal to orient card to go ahead and orient the spindle	M19 turn on spindle orient output and wait for "SpindlesOriented" input to activate. , M20 turn off spindle orient output.	
SafetyDoorLockOpen	Used to energize a lock solenoid to allow the safety door to be opened.	Energized when not running a job, If P985 = 1, will unlock door if feedhold and spindle is not on, If p985 = 2 only unlocks if no job in progress.	
GreenLight	Output for use with a LightStack lights. Parameter 890 toggles the lights from being solid to flashing when activated. P890=1 Solid when activated P890=0 Blinking when activated	GreenLight is on when Job in progress and no faults.	
AmberLight		AmberLight is on when no job in progress and no faults (Machine in idle)	
RedLight		RedLight is on when machine is in fault condition	
M94M955111	General purpose outputs, for use by power users that wish to activate any output within a custom Mcode using the M94 (output ON) and M95 (Output Off) commands. For example: Set M94M955111 to an ouput using the	M94/111 turns on the output that "M94955111" is assigned to. M95/111 turn off the output that "M94955111" is assigned to.	
M94M955112		M94/112 turns on the output that "M94955112" is assigned to. M95/112 turn off the output that "M94955112" is assigned to.	
M94M955113		Etc..	

M94M955114	<p>Acorn Wizard. For this example lets set it to output 8. Then to turn on output 8 use the M94 (output ON) m code in a custom macro like this.</p> <p>M94/111 ; this will turn on output 8 G4 P2 ; wait 2 seconds M95/111 ; this will turn off output 8</p> <p>Example two: set M94M955120 to output 36 on the Ether1616 output menu using the Acorn Wizard. This is one way to use it in a custom macro.</p> <p>M94/120 ; this will turn on output 36 G4 P2 ; wait 2 seconds M95/120 ; this will turn off output 36</p>	
M94M955115		
M94M955116		
M94M955117		
M94M955118		
M94M955119		
M94M955120		
M94M955121		
M94M955122		
M94M955123		
M94M955124		
M94M955125		
M94M955126		
Acorn Stock M-codes: Please Refer to the CNC12 Mill and Lathe Operator manuals for more details on individual M codes		
M3	Spindle CW	
M4	Spindle CCW	
M5	Spindle OFF	
M6	Tool Change, if no custom mfuncm6.mac exists then the CNC12 default M6 is used.	
M7	Mist, Refer to the CNC12 Mill and Lathe Operator manuals for more details on this M code	
M8	Flood, Refer to the CNC12 Mill and Lathe Operator manuals for more details on this M code	

M9	Mist and Flood OFF, Refer to the CNC12 Mill and Lathe Operator manuals for more details on this M code
M10	; Mill: SET ClampOn ; Lathe: SET ChuckOpen, RST ChuckClose
M11	; Mill: RST ClampOn ; Lathe: RST ChuckOpen, SET ChuckClose
M13	Cutoff Tool ON
M14	Cutoff Tool OFF
M15	Tool unclamp macro
M16	Tool clamp macro
M19	Spindle Orientation Macro
M20	Turn Spindle Orientation Off Macro
M22	PartchuteIn macro
M23	Turn off PartchuteIn macro
M27	VacuumOn macro
M28	Turn off VacuumOn macro
M32	Turn on TailStockInOut
M33	Turn off TailStockin, Turn on TailStockOut
M34	Unused Macro and Available for customization
M35	DustCollection On
M36	Turn off DustCollection
M37	Unused Macro and Available for customization
M38	Turn off Custom macro 37
M41	Selects Low Range Spindle

M42	Selects Med Range Spindle		
M43	Selects High Range Spindle		
M48	Aux 1 macro		
M49	Aux 2 macro. Sets specified axis to 0 part 0	VCP Aux 2 Button	
M50	Aux 3 macro. Sets all axes to part 0	VCP Aux 3 Button	
M51	Unused macro and Available for customization		
M52	Unused macro and Available for customization		
M53	Unused macro and Available for customization		
M54	Unused macro and Available for customization		
M55 (mfunc55.mac)	User Customizable Macro, pre mapped to VCP Aux 8, press Aux 8 for instructions on how to edit and customize,The macro contains examples of customizations in the macro itself, open it to see them.		
M56	User Customizable Macro, pre mapped to VCP Aux 9, press Aux 9 for instructions on how to edit and customize,The macro contains examples of customizations in the macro itself, open it to see them.		
M57	User Customizable Macro, pre mapped to VCP Aux 10, press Aux 10 for instructions on how to edit and customize,The macro contains examples of customizations in the macro itself, open it to see them.		
M58	User Customizable Macro, pre mapped to VCP Aux 11, press Aux 11 for instructions on how to edit and customize,The macro contains examples of customizations in the macro itself, open it to see them.		
M59	Reset Home Position, pre mapped to VCP Aux 12 "Reset Home" , runs macro to reset home without have to reboot the machine tool.		
M61	Use Acorn Wizard i/o map to set Acorn Output 1 = to "OUTPUT1" then this macro (M61) will turn on that output		
M62	Use Acorn Wizard i/o map to set Acorn Output 2 = to "OUTPUT2" then this macro (M62) will turn on that output		
M63	Use Acorn Wizard i/o map to set Acorn Output 3 = to "OUTPUT3" then this macro (M63) will turn on that output		
M64	Use Acorn Wizard i/o map to set Acorn Output 4 = to "OUTPUT4" then this macro (M64) will turn on that output		
M65	Use Acorn Wizard i/o map to set Acorn Output 5 = to "OUTPUT5" then this macro (M65) will turn on that output		
M66	Use Acorn Wizard i/o map to set Acorn Output 6 = to "OUTPUT6" then this macro (M66) will turn on that output		

M67	Use Acorn Wizard i/o map to set Acorn Output 7 = to "OUTPUT7" then this macro (M67) will turn on that output	
M68	Use Acorn Wizard i/o map to set Acorn Output 8 = to "OUTPUT8" then this macro (M68) will turn on that output	
M69	Move all axes to machine Zero	
M70	Sets an axis to zero	
M71	Axes Home Tripped Check (Used in Paired Axes Auto Squaring)	
M72	3rd Axis Homing (Used in Paired Axes Auto Squaring)	
M73	Independent Axis Homing (Used in Paired Axes Auto Squaring)	
M74	Paired Axes Auto Home/Squaring (Used in Paired Axes Auto Squaring)	
M75	Pair Axes (Used in Paired Axes Auto Squaring)	
M81	Use Acorn Wizard i/o map to set Acorn Output 1 = to "OUTPUT1" then this macro (M61) will turn OFF that output	
M82	Use Acorn Wizard i/o map to set Acorn Output 2 = to "OUTPUT2" then this macro (M62) will turn OFF that output	
M83	Use Acorn Wizard i/o map to set Acorn Output 3 = to "OUTPUT3" then this macro (M63) will turn OFF that output	
M84	Use Acorn Wizard i/o map to set Acorn Output 4 = to "OUTPUT4" then this macro (M64) will turn OFF that output	
M85	Use Acorn Wizard i/o map to set Acorn Output 5 = to "OUTPUT5" then this macro (M65) will turn OFF that output	
M86	Use Acorn Wizard i/o map to set Acorn Output 6 = to "OUTPUT6" then this macro (M66) will turn OFF that output	
M87	Use Acorn Wizard i/o map to set Acorn Output 7 = to "OUTPUT7" then this macro (M67) will turn OFF that output	
M88	Use Acorn Wizard i/o map to set Acorn Output 8 = to "OUTPUT8" then this macro (M68) will turn OFF that output	
Park.mac	User editable machine tool parking macro that is used when shutting down the machine for the day. Allows user to override the default park behavior with any customization necessary. With Acorn Typically park is used to return the machine tool to the home position when using "Simple Home" (M26) or very close to the home position so homing out the next morning is fast and easy.	Editable from the Acorn Wizard or in the 'system' folder. The macro contains examples of typical park sernatoris in the macro itself, open it to see them.
Plcmacro1.mac	Macros used in conjunction with the corresponding Macro 1, Macro 2, Macro 3, Macro 4 buttons on the Wireless MPG.	Macro 1 button on the MPG
Plcmacro2.mac	Editable/Customizable from the Acorn Wizard or from the 'system' folder with	Macro 2 button on the MPG

Plcmacro3.mac	Notepad++	Macro 3 button on the MPG
Plcmacro4.mac		Macro 4 button on the MPG
cncm.hom	Mill and Router Machine tool homing program located in \cncm directory, Acorn Wizard will auto generate based on settings	
cnct.hom	Lathe Machine tool homing program located in \cnct directory, Acorn Wizard will auto generate based on settings	
<p>Notes:</p> <p>“RouterDustCollection (M8)” can not be used with “Flood (M8)” at the same time. MillDustCollectionOn (M35) CAN be used with “Flood (M8)” at the same time.</p> <p>“RouterVacuumHoldDown (M7)” can not be used with “Mist (M7)” at the same time. MillVacuumOn (M33) CAN be used with “Mist (M7)” at the same time.</p> <p>VfdDirection (M3/M4) can not be used in conjunction with SpinFWD (M3), SpinREV (M4), G540SpinRevOff, G540SpinFwdOff outputs, see schematics for proper hookups and use</p> <p>Refer to the CNC12 Mill and Lathe Operator manuals for more details and example of M codes https://www.centroidcnc.com/centroid_diy/centroid_manuals.html</p>		