

UCCNC 2017

Screenset

Reference Guide

Version 1.04

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By installing this software, the user agrees to the license agreement found in 2017_License.txt. Please read before installing.

A copy of this manual will be installed in the \UCCNC\Documentation folder for your convenience, and a shortcut will also be added to your Windows Start menu.

Introduction

The 2017 Screenset is a custom interface for the UCCNC machine control software, providing additional features and a simplified user interface.

Additional features include Z axis auto zero, automatic auto zero after toolchange, and several basic probing macros.

Limitations

- 1) The 2017 Screenset does not include the UCCAM functionality found in the default UCCNC screenset. There are no plans to add this to the 2017 Screenset.
- 2) There are 42 each, Input and Output triggers, compared with 96 each in the default UCCNC screenset.
- 3) The 2017 Screenset does not have an M4, Spindle CCW button. It works with clockwise spindle rotation only.

Requirements

The 2017 Screenset requires a licensed copy of UCCNC, from CNC Drive in Hungary.

<http://www.cncdrive.com/UCCNC.html>

The 2017 Screenset works with the UC100, UC300USB, UC300ETH, and UC400ETH motion controllers.

The UC300 controllers are supported only when used with the 5LPT motherboard from CNC Drive, or the M44 motherboard from CNC4PC. Any other configurations are not supported.

The 2017 Screenset is designed to be run on a 1920x1080 monitor, with the Windows Taskbar hidden. While it can be resized to fit other resolutions, the quality of the graphics may suffer somewhat.

Some macros included in the 2017 Screenset will not function until the machine has been homed, and a repeatable home position is also required.

Installation

Installation of the 2017 Screenset is a simple process.

Run 2017_Screenset_V1.x_Install.exe, and follow the prompts in the Setup Wizard.

Be sure to install the Screenset into the same folder that UCCNC is installed in. The installer should find the install path for you. If it doesn't, set it to install to the ...\UCCNC\ installation folder..

When the installation wizard is complete, there is one more step to installing the screenset.

Navigate to your UCCNC\Profiles folder, and open the 2017_Screenset_Macros\ folder. Copy the contents of this folder into the macro_*profilename* folder of your profile. If you have a functioning UCCNC profile, It's highly recommended to create a new profile before setting up the 2017 Screenset.

Create new Profile

Follow these steps to create a copy of your current profile.

- 1) Start UCCNC with the default screenset, and go to Configuration > Profiles.
- 2) Check the "Create shortcut on desktop" Checkbox.
- 3) Type in a new profile name and hit the "Enter" key.
- 4) Click the "Create new profile" button.

Assign Screenset to Profile

To use the 2017 Screenset with your newly created profile, you must edit the ".pro" profile file.

Go to \UCCNC\Profiles, and open the .pro file that you just created (newprofilename.pro) in NotePad or another editor.

The first two lines should say:

```
[Screensetsettings]
mainscreenfilename=Defaultscreenset
```

Change "Defaultscreenset" to "2017", so that it reads like this:

```
[Screensetsettings]
mainscreenfilename=2017
```

Save and close the .pro file.

Your new profile is now ready to run the 2017 Screenset.

Uninstall Note: The 2017 screenset can be uninstalled from the "Programs and Features" option in the Windows Control Panel.

Setup

Verify / Configure Axis (motor) Settings

Start UCCNC with the newly created desktop shortcut, and you should now see the 2017 Screenset. (Note: If running in demo mode, select the appropriate motion controller from the list when starting.)

Click the “Axes Setup” tab at the top center of the screen, which will take you to the Axes setup pages. The 2017 Screenset has consolidated the axis setup into three sub-tabs:

- 1) X, Y, and Z axes.
- 2) A, B, and C axes.
- 3) Spindle

All of the UCCNC axis settings can be found on these pages. As per standard UCCNC convention, you must click the “Apply Settings” and “Save Settings” button when making any changes.

Verify / Configure I/O Settings

Click the “I/O Setup” tab at the top of the screen to go to the I/O setup pages. There you will find three sub tabs:

- 1) General. This page contains General, MPG, THC, and Analog I/O Settings. (Analog is only available with UC300 motion controllers)
- 2) I/O Triggers. This page contains 42 Input Triggers and 42 Output Triggers. See the UCCNC User Manual for information on their use.
- 3) Hotkeys. This page contains the settings for the 48 available hotkey assignments. See the UCCNC User Manual for information on their use.

All of the UCCNC I/O settings can be found on these pages. As per standard UCCNC convention, you must click the “Apply Settings” and “Save Settings” button when making any changes.

Verify / Configure Settings

Click the Settings tab at the top of the screen to verify standard UCCNC settings, and configure settings required by the 2017 Screenset. There are two “Settings” sub tabs:

- 1) General Settings.
- 2) Function Settings.

Note: Standard UCCNC Settings require the use of the “Apply Settings” button to take effect, and the “Save Settings” button to be saved for the next time that UCCNC is run.

Settings unique to the 2017 Screenset can be used immediately, and are saved when UCCNC is shut down. Save requirements are specified below for each section.

General Settings

General Settings is broken down into several groups, most of which are standard UCCNC settings.

Kernel Frequency

UCCNC Kernel Frequency options and Communication Buffer Size setting. See the UCCNC User Manual for more information. (Apply and Save required)

Appearance Settings

Toolpath display options and program color options. To change a color, click on the color square to bring up a color picker. See the UCCNC User Manual for more information. (Apply and Save required)

Unknown G-Code Handling

Select the option that determines how unknown g-codes are dealt with by UCCNC. See the UCCNC User Manual for more information. (Apply and Save required)

General Settings.

A group of standard UCCNC settings with two exceptions.

Safe Z Height 1 (Run From Here Only)

This is the default Safe Z settings for UCCNC. It's value is in Work Coordinates. In the 2017 Screenset, this value is only used when using the Run From Here option. (Apply and Save required)

Safe Z Height 2 (Machine Coordinates)

This is an alternate Safe Z setting for the 2017 Screenset. It's value is in Machine Coordinates. Safe Z in Machine Coordinates provides a consistent height which is much safer than the default SafeZ.

This value is used for the following functions in the 2017 Screenset:

- 1) Goto Zero.
- 2) Park 1 – Park 4
- 3) Auto Zero Initialize
- 4) Goto Tool Change Position

This setting is automatically saved when UCCNC is closed.

Homing Sequence

UCCNC standard Homing Sequence settings.
(Apply and Save required)

Configure

Options to Configure Plugins, Macroloops, and to Lock the UCCNC settings.

Profiles

UCCNC standard profile controls.

System Information

UCCNC hardware/software/license information

Function Settings

Function Settings is broken down into several groups. Some are standard UCCNC settings, and others are settings specific to the 2017 Screenset.

CV Settings

UCCNC CV Settings. See the UCCNC User Manual for more information.
(Apply and Save required)

Auto Zero Settings

Settings for the 2017 Screenset Auto Zero macros. See below for information on each of the available settings/ options. (These settings are automatically saved when UCCNC is closed.)

Plate Thickness

Thickness of the movable plate used for zeroing the Z axis Plate Thickness

Clearance Plane Z Value

Work Coordinate Z value of Clearance Plane. After running an Auto Zero macro, the tool retracts to this Z position. It MUST be higher than the work piece, to prevent the tool from plunging down into the work after zeroing. This is especially important if you set Z zero to the bottom of the work piece. Also, be aware of your fixed plate Z location relative to Z zero, as after zeroing a new tool to the fixed plate, the tool will move to the Clearance Plane position, regardless of the fixed plate's relationship to Z zero.

Fixed Plate X Position

Machine Coordinate X position of the Auto Zero fixed plate. When zeroing the tool to the fixed plate, the center of the tool will be located at this position.

Fixed Plate Y Position

Machine Coordinate Y position of the Auto Zero fixed plate. When zeroing the tool to the fixed plate, the center of the tool will be located at this position.

First Probe Distance

Z axis travel distance for the auto zero macro. Set this distance to a value greater than the maximum

distance from the tool to the plate. If the distance to the fixed plate is different than the distance to the movable plate, use the larger of the two distances. Add 10%-20% as a safety margin.

Retract Distance

The 2017 Screenset uses a double touch auto zero routine. The Retract Distance is the amount the tool lifts from the plate before making the second probe move.

Second Probe Distance

The 2017 Screenset uses a double touch auto zero routine. The Second Probe Distance is the travel distance of the second probe move, and should be set to a value greater than the Retract Distance.

First Probe Feedrate

Feedrate of the first auto zero probing move. By using a faster First Probe Feedrate, the total elapsed time of the auto zero routine can be reduced.

Note: If using a rigid auto zero plate, an excessive First Probe Feedrate may cause tool damage, as the Z axis needs room to decelerate at the end of the probing move. A spring loaded auto zero device can allow faster feedrates without risking tool damage.

Second Probe Feedrate

Feedrate of the second probe feedrate where the actual zeroing of the tool is done. While feedrate should technically have no affect on the zeroing process, a slower feedrate can minimize or eliminate machine deficiencies from the process.

Z axis Home Switch Clearance

The 2017 Screenset checks the home switch location prior to making retract moves to prevent machine damage or limit switch triggers. If it finds that such moves will travel past the home switch, the user is given an option to move to a safe distance below the home switch.

This value specifies an absolute distance below Z zero that the machine can safely retract to.

Use Material Offset Checkbox

The Material Offset option allows setting Z zero at a position other than the location of the auto zero plate. This can be useful in a variety of situations.

Example: Say that you have g-code that cuts profiles .74” deep into a .75” thick panel, and you'd like to use the same code on thinner material, say .50”. There are two ways to use the offset.

- 1) Set the offset to the difference between the material originally coded for (.75”) and the material your using (.5”). You'd set the offset to .25”, and zero with the plate on the material. Z zero will be set .25” above the material.
- 2) Set the offset to the thickness of the original material, .75”, and zero to the bed of the machine. Z zero will be set .75” above the bed. This will allow you to cut the profiles from any material thickness not greater than the original.

Note: Negative values are valid for Material Offset, but will result in a warning message during the Auto Zero macros.

Delay Spindle Start

When checked, this option will result in a Message Box being displayed at the end of the Auto Zero macro. The macro will not proceed until the Message Box is closed by the user.

This gives the user time to either remove a clipped on ground wire, or, when zeroing a new tool after a tool change, start the spindle before continuing.

Set Z Zero for All Offsets

The Auto Zero routine will normally set Z zero for the currently active Work Coordinate System (G54 through G59).

Enabling this option sets Z zero for all six Work Offsets, so that multiple Work Offsets can be used without the need to re-zero tools.

Tool Change Operation

UCCNC standard tool change settings. See the UCCNC Manual for more information. To use the 2017 Screensets Auto Zero during tool changes, “Automatic Tool Changer” should be selected.

(Apply and Save required)

Tool Change Position

X, Y, and Z axis Tool Change Position, in Machine Coordinates.

If Use Safe Z option is enabled, the Z axis will first move to the position defined as “Safe Z Height 2” on the General Settings page. It will then move the the XY Coordinates, before finally moving to the Z tool change position. (These settings are automatically saved when UCCNC is closed.)

Jog % Increments

The 2017 Screenset uses pre-defined jogging speed increments, which are set here. Values should be entered incrementally, with the smallest value used for #1, and the highest for #6.

The plus (“+”) and minus(“-”) buttons on the jog panel will cycle through these values.

(These settings are automatically saved when UCCNC is closed.)

Jog Step Increments

The 2017 Screenset uses pre-defined jogging step increments, which are set here. Values should be entered incrementally, with the smallest value used for #1, and the highest for #6.

The plus (“+”) and minus(“-”) buttons on the jog panel will cycle through these values.

(These settings are automatically saved when UCCNC is closed.)

Probing Settings

UCCNC Probe settings which are normally found under Tools > Probe in the Default UCCNC screenset. See the UCCNC Manual for more information. (Apply and Save required)

Park Positions

The 2017 Screenset provides four user definable Park Positions.

Park positions 1 & 2 can be used from their respective buttons on the Run screen, while positions 3 & 4 can only be called from g-code.

Each positions coordinates can be in either Work Coordinates or machine Coordinates.

A “Use Safe Z” option effects all four Park Positions. Use Safe Z uses the “Safe Z Height 2” on the General Settings page, and this Safe Z is always in machine coordinates, regardless of the coordinates used by the Park Position.

Park positions can be called from g-code or MDI with the following M codes:

Park Position #1 – M20524

Park Position #2 – M20525

Park Position #3 – M20526

Park Position #4 – M20527

(These settings are automatically saved when UCCNC is closed.)

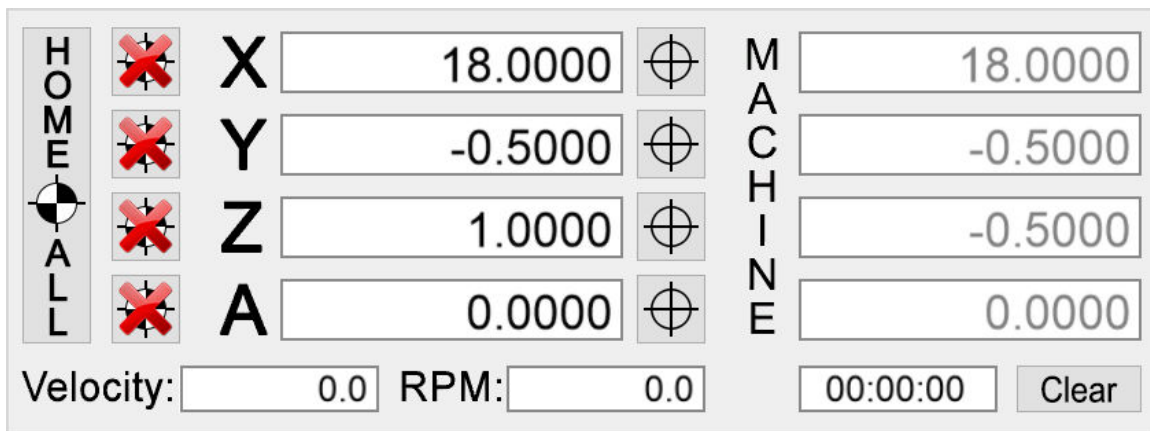
Using the 2017 Screenset

Note: It is assumed that the user has working knowledge of the UCCNC control software. Standard UCCNC functions and operation are not covered in this guide.

Run Screen

UCCNC is operated mainly from the “Run” tab, which has the controls broken down into groups.

Main DRO Group



This group contains the main DRO displays, as well as the Homing and axes zero commands.

Homing buttons

On the left, is a “Home All” button, which homes all axis in the order specified on the General Settings tab page.

To the right of the Home All button, are individual “Home” buttons for each axis, which also indicate whether the axes are homed or not.

Axis that have not been homed will have a red “X” on the button. Axis that have been homed will no longer display the “X”.



Axis prior to Homing



Axis after Homing

Main Coordinate DRO's

To the right of the Homing buttons are the main DRO's for the X, Y, Z, and A axis. These are always displayed in the current work coordinate system.

Axis Zero Buttons

Adjacent to the Main Coordinate DRO's are Axis Zero Buttons.



Zero Axis Button

Machine Coordinate DRO's

To the far right of the screen are the Machine Coordinate DRO's for the X, Y, Z, and A axis.

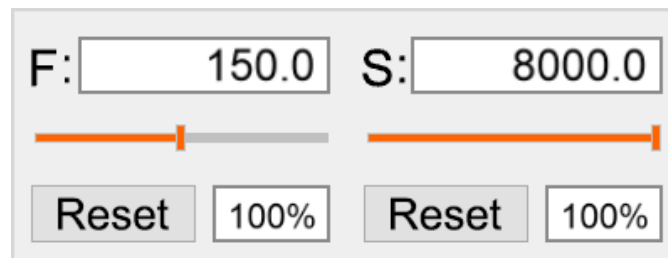
Velocity and RPM DRO's

Below the main coordinate DRO's are the actual Velocity and RPM DRO's.

Run Time DRO

Below the Machine Coordinate DRO's is the run time DRO. To reset the timer, press the “Clear” button to it's right.

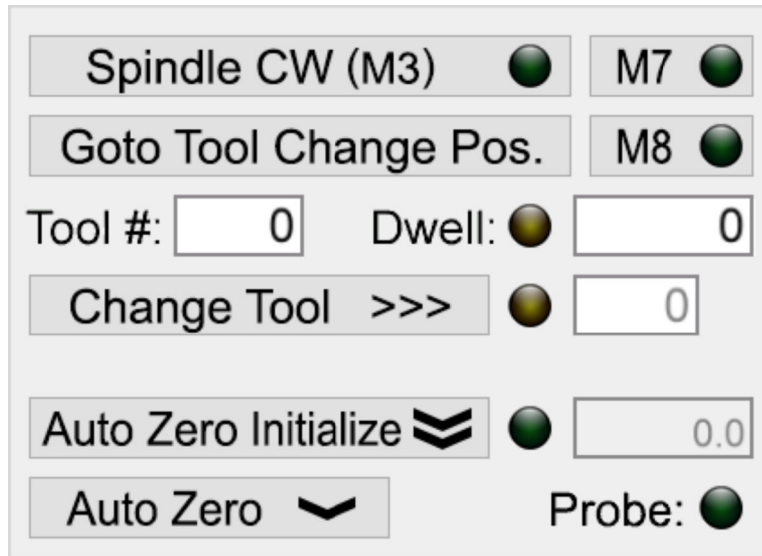
Feedrate/ Spindle Speed Group



This group contains the current Feedrate and Spindle Speed DRO's. These are read only, and can not be edited by the user.

It also contains the Override DRO's for each, and slider controls to adjust the feedrate and spindle speed overrides. The “Reset” buttons will reset the override values to 100%. These DRO's can be edited by the user, ie, specific override values can be entered into the DRO's.

Spindle Control Group



This group contains a variety of controls related to the spindle.

Spindle CW (M3)

This button toggles the spindle on and off, and contains an LED to indicate the state of the spindle. This button is also controlled by the M3 g-code command.

GoTo Tool Change Position (button macro 20521)

This button sends the machine to the tool change position specified on the Function Settings page.

M7

This button toggles the M7 output pin when configured, and contains an LED to indicate it's current state.

M8

This button toggles the M8 output pin when configured, and contains an LED to indicate it's current state.

Tool # DRO

Displays the currently selected tool number. (Read Only)

Dwell DRO

Displays the dwell duration when a dwell is in effect. (Read Only) The adjacent LED indicates when a dwell is in effect.

Change Tool >>> (button macro 20520)

To change the current tool manually, enter the tool # in the adjacent DRO, and press the button. This button calls an M6 g-code. See the Auto Zero section for more information. The adjacent LED indicates when a tool change is in progress.

Note: Tool changes are not allowed without first running the Auto Zero Initialize routine.

Auto Zero Initialize (button macro 20522)

This button performs a Z axis auto zero at the current location, and then moves to the fixed plate location, where it touches the fixed plate and stores the fixed plate Z coordinate.. See the Auto Zero section for more information.

Auto Zero (button macro 20523)

This button performs a simple Z axis auto zero at the current position. See the Auto Zero section for more information.

Probe LED

To the right of the Auto Zero button, is a Probe Input LED to display the state of the Probe Input. This is useful for testing the touch plate prior to running an Auto Zero macro.

Other Groups

All of the remaining controls on the Run screen are standard UCCNC controls, and should be self explanatory.

Offsets Screen

The 2017 Offsets screen duplicates the standard UCCNC Offsets tab page, with two minor changes.

- 1) The currently displayed offsets are selected by the buttons on the left side of the screen, with the currently displayed offsets shown by a blue border around the button.
- 2) The Job Properties have been moved to the Offset Screen, from the Diagnostics tab page in the default screens.

Auto Zero Operation

The 2017 Screenset includes both a “simple” Auto Zero, and a method of automatically measuring tools after a manual toolchange.

Both methods require a movable touch plate or “tool setter”, wired to trigger the Probe input in UCCNC when activated.

To Auto Zero during a tool change, a second, fixed plate (or tool setter) is required. This should be permanently mounted in an area accessible by the tool, with it's X and Y location specified in the “Z Axis Auto Zero Settings”. This plate is also wired to the Probe Input.

Simple Auto Zero

For times when no tool changes are required, the “simple” auto zero is a quick option for zeroing the tool to the work.

To use the simple auto zero, jog the tool over the touch plate, and press the “Auto Zero” button. The tool will begin moving downward at the “First Probe Feedrate” until it reaches the plate. It will then retract the “Retract Distance” and probe again at the “Second Probe Feedrate” to get a more accurate reading.

Z zero is then set to the top of the work piece.

The tool will then retract to the “Clearance Plane Z Value”, which is in Work Coordinates.

Note: Prior to running any Auto Zero macro, it's highly recommended that the user verify that the Probe Input is functioning properly by touching the plate to the tool, and confirm that the Probe LED is activating.

Simple auto zero also supports the Material Offset option. See explanation above.

Auto Zero Initialize

Auto Zeroing during a tool change first requires running the “Auto Zero Initialize” macro.

The macro starts similarly to the Simple Auto Zero.

Jog the tool over the touch plate, and click the “Auto Zero Initialize” button (NOT the “Auto Zero” button). This will set Z zero the same way as the Simple Auto Zero described above. After the tool retracts to the Clearance Plane, it will then travel to the fixed plate, and begin probing for the fixed plate Z position. After the double probe to find the plate position, the tool will again retract to the Clearance Plane.

The macro will then activate an LED adjacent to the Auto Zero Initialize button, LED, #730. This LED tells the M6 macro that it's OK to change tools. If you don't run the Auto Zero Initialize macro, the M6 macro will exit with an error.

To the right of the LED is a read-only DRO, where the fixed plate position is stored.

Tool Changes

Automatic tool measurement is done with the M6 macro. In order for UCCNC to run the macro, the user must configure UCCNC for “Automatic Tool Changer” on the “Function Settings” Screen.

When UCCNC encounters an M6 in a g-code program, it will then run the M6 macro.

The M6 macro does the following:

- 1) Moves the spindle to the Tool Change Position, as specified on the Function Settings page. If Use Safe Z is enabled, it will first go to the Safe Z 2 position before moving to the tool change position.
- 2) The macro will then pause to allow the user to change tools. A Message Box will be displayed, prompting the user to change tools. When finished changing tools, press the OK button to continue.
- 3) The spindle will then move to the fixed plate location, and probe to find the plate position. The tool Z position will then be set to the value stored in Field #20358, effectively “zeroing” the tool to match the zero position of the tool used during the “Auto Zero Initialize”.
- 4) The tool will then retract to the Clearance Plane
- 5) If “Delay Spindle Start” is enabled, a Message Box will prompt the user to click OK to continue.
- 6) The macro will exit, and the g-code will resume.

Manual Tool Changes

It's also possible to change tools without calling an M6 from g-code, and still have them measured automatically. To do this, enter the new tool number, and click the “Change Tool >>>” button. This will run the M6 macro, as described above.

This allows the user to run multiple g-code programs, with each using unique tools, and still have all of the tools zeroed to match the first.

Auto Zero Notes:

There are multiple safety checks in the Auto Zero and M6 macros, to try to minimize errors from occurring.

- 1) Auto Zero Initialize and M6 macros require the machine to be Homed (Ref'd) before they will run. This is to ensure that UCCNC knows where the fixed plate and tool change locations are. The user will be notified if Homing has not been done.
- 2) If any of the settings contain invalid values, the macros will not run, and will notify the user of the error.
- 3) After zeroing, the Clearance Plane position is compared to the Z axis home switch position, and Home Switch Clearance value. If the Clearance Plane is higher than the Home Switch Clearance value, the user will be notified of the potential error, and given the option of moving to the Home Switch Clearance position, or aborting the macro.

Customization

This section details the UCCNC numbers for buttons, checkboxes, fields and LED's used in the 2017 Screenset.

Checkboxes

In order to change the appearance of the checkboxes in UCCNC, the checkboxes in the 2017 screenset are actually toggle buttons. The buttons toggle actual UCCNC checkboxes via the macro associated with their button number.

For example, button number 20301 calls macro M20301.txt. This macro toggles the state of the button, and changes the state of it's corresponding checkbox.

The actual checkboxes' states are saved in the profile. When UCCNC starts, the Constructor macro (M99998.txt) reads the checkbox state, and sets the state of the corresponding button to match.

The following table lists the button codes for the “Checkbox Buttons” in the 2017 Screenset

Button Number	Description	UCCNC Checkbox Number	Screenset Location
20301	25kHz Frequency	86	Settings > General – Kernel Frequency
20302	50kHz Frequency	87	Settings > General – Kernel Frequency
20303	100kHz Frequency	88	Settings > General – Kernel Frequency
20304	200kHz Frequency	214	Settings > General – Kernel Frequency
20305	400kHz Frequency	215	Settings > General – Kernel Frequency
20306	Maximize UCCNC on Startup	147	Settings > General – Appearance
20307	Show Crosshair on TCP	90	Settings > General – Appearance
20308	3D TCP Marker	80	Settings > General – Appearance
20309	Show Cone Icon on TCP	89	Settings > General – Appearance
20310	Rotate TCP Marker with Plane Selection	219	Settings > General – Appearance
20311	Show Zero Marker	220	Settings > General – Appearance
20312	Unknown G-Code - Ignore	216	Settings > General – Unknown G-Code
20313	Unknown G-Code – Display Warning	217	Settings > General – Unknown G-Code
20314	Unknown G-Code – Do Not Run	218	Settings > General – Unknown G-Code
20315	Dwell in Seconds	212	Settings > General – General Settings
20316	Display Softlimit Message	222	Settings > General - General
20317	Validate Textfields with “ENTER”	227	Settings > General - General
20547	Pre-Compile all Macros on Startup	241	Settings > General - General
20549	Disable Jog Panel Popup on Mouseover	242	Settings > General - General
20318	Create Desktop Shortcut	79	Settings > General - Profiles

20320	Exact Stop Mode	73	Settings > Function - CV
20321	CV Mode	74	Settings > Function - CV
20322	Use Material Offset	20301	Settings > Function – Z Axis Auto Zero
20323	Delay Spindle Start	20302	Settings > Function – Z Axis Auto Zero
20545	Zero All Offsets	20312	Settings > Function – Z Axis Auto Zero
20324	Ignore Tool Change	76	Settings > Function – Tool Change Op.
20325	Stop Spindle, Wait for Cycle Start	77	Settings > Function – Tool Change Op.
20326	Automatic Tool Changer	78	Settings > Function – Tool Change Op.
20327	Use Safe Z	20303	Settings > Function – Tool Chng. Pos.
20328	Add Axis Names	228	Settings > Function – Probe Settings
20329	Write CSV	229	Settings > Function – Probe Settings
20330	Include X	230	Settings > Function – Probe Settings
20331	Include Y	231	Settings > Function – Probe Settings
20332	Include Z	232	Settings > Function – Probe Settings
20333	Include A	233	Settings > Function – Probe Settings
20334	Include B	234	Settings > Function – Probe Settings
20335	Include C	235	Settings > Function – Probe Settings
20336	Clear Filename on M41	236	Settings > Function – Probe Settings
20337	Park Position 1 Machine Coordinates	20304	Settings > Function – Park Positions
20338	Park Position 2 Machine Coordinates	20305	Settings > Function – Park Positions
20339	Park Position 3 Machine Coordinates	20306	Settings > Function – Park Positions
20340	Park Position 4 Machine Coordinates	30307	Settings > Function – Park Positions
20341	Park Use Safe Z	20308	Settings > Function – Park Positions
20342	Enable X Axis	1	Axes Setup > XYZ Axes – X Axis
20343	Step Active Low	2	Axes Setup > XYZ Axes – X Axis
20344	Direction Active Low	3	Axes Setup > XYZ Axes – X Axis
20345	Enable Active Low	141	Axes Setup > XYZ Axes – X Axis
20346	Limit – Active Low	4	Axes Setup > XYZ Axes – X Axis
20347	Limit + Active Low	5	Axes Setup > XYZ Axes – X Axis
20348	Home Active Low	6	Axes Setup > XYZ Axes – X Axis
20349	Home Positive	7	Axes Setup > XYZ Axes – X Axis
20350	Home Auto Zero	8	Axes Setup > XYZ Axes – X Axis
20351	Enable Backlash Compensation	9	Axes Setup > XYZ Axes – X Axis
20352	Enable Y Axis	10	Axes Setup > XYZ Axes – Y Axis
20353	Step Active Low	11	Axes Setup > XYZ Axes – Y Axis
20354	Direction Active Low	12	Axes Setup > XYZ Axes – Y Axis
20355	Enable Active Low	142	Axes Setup > XYZ Axes – Y Axis
20356	Limit – Active Low	13	Axes Setup > XYZ Axes – Y Axis

20357	Limit + Active Low	14	Axes Setup > XYZ Axes – Y Axis
20358	Home Active Low	15	Axes Setup > XYZ Axes – Y Axis
20359	Home Positive	16	Axes Setup > XYZ Axes – Y Axis
20360	Home Auto Zero	17	Axes Setup > XYZ Axes – Y Axis
20361	Enable Backlash Compensation	18	Axes Setup > XYZ Axes – Y Axis
20362	Enable Z Axis	19	Axes Setup > XYZ Axes – Z Axis
20363	Step Active Low	20	Axes Setup > XYZ Axes – Z Axis
20364	Direction Active Low	21	Axes Setup > XYZ Axes – Z Axis
20365	Enable Active Low	143	Axes Setup > XYZ Axes – Z Axis
20366	Limit – Active Low	22	Axes Setup > XYZ Axes – Z Axis
20367	Limit + Active Low	23	Axes Setup > XYZ Axes – Z Axis
20368	Home Active Low	24	Axes Setup > XYZ Axes – Z Axis
20369	Home Positive	25	Axes Setup > XYZ Axes – Z Axis
20370	Home Auto Zero	26	Axes Setup > XYZ Axes – Z Axis
20371	Enable Backlash Compensation	27	Axes Setup > XYZ Axes – Z Axis
20372	Enable A Axis	28	Axes Setup > ABC Axes – A Axis
20373	Step Active Low	29	Axes Setup > ABC Axes – A Axis
20374	Direction Active Low	30	Axes Setup > ABC Axes – A Axis
20375	Enable Active Low	144	Axes Setup > ABC Axes – A Axis
20376	Limit – Active Low	31	Axes Setup > ABC Axes – A Axis
20377	Limit + Active Low	32	Axes Setup > ABC Axes – A Axis
20378	Home Active Low	33	Axes Setup > ABC Axes – A Axis
20379	Home Positive	34	Axes Setup > ABC Axes – A Axis
20380	Home Auto Zero	35	Axes Setup > ABC Axes – A Axis
20381	Enable Backlash Compensation	36	Axes Setup > ABC Axes – A Axis
20382	Enable B Axis	37	Axes Setup > ABC Axes – B Axis
20383	Step Active Low	38	Axes Setup > ABC Axes – B Axis
20384	Direction Active Low	39	Axes Setup > ABC Axes – B Axis
20385	Enable Active Low	145	Axes Setup > ABC Axes – B Axis
20386	Limit – Active Low	40	Axes Setup > ABC Axes – B Axis
20387	Limit + Active Low	41	Axes Setup > ABC Axes – B Axis
20388	Home Active Low	42	Axes Setup > ABC Axes – B Axis
20389	Home Positive	43	Axes Setup > ABC Axes – B Axis
20390	Home Auto Zero	44	Axes Setup > ABC Axes – B Axis
20391	Enable Backlash Compensation	45	Axes Setup > ABC Axes – B Axis
20392	Enable C Axis	46	Axes Setup > ABC Axes – C Axis
20393	Step Active Low	47	Axes Setup > ABC Axes – C Axis
20394	Direction Active Low	48	Axes Setup > ABC Axes – C Axis

20395	Enable Active Low	146	Axes Setup > ABC Axes – C Axis
20396	Limit – Active Low	49	Axes Setup > ABC Axes – C Axis
20397	Limit + Active Low	50	Axes Setup > ABC Axes – C Axis
20398	Home Active Low	51	Axes Setup > ABC Axes – C Axis
20399	Home Positive	52	Axes Setup > ABC Axes – C Axis
20400	Home Auto Zero	53	Axes Setup > ABC Axes – C Axis
20401	Enable Backlash Compensation	54	Axes Setup > ABC Axes – C Axis
20402	Enable PWM	61	Axes Setup > Spindle – PWM Spindle
20403	PWM Active Low	62	Axes Setup > Spindle – PWM Spindle
20404	PWM Direction Active Low	63	Axes Setup > Spindle – PWM Spindle
20405	Use Pulleys	226	Axes Setup > Spindle – Spindle Speeds
20406	Reverse Encoder - Feedback	201	Axes Setup > Spindle – Spindle Feedback
20407	Enable Step/Direction	62	Axes Setup > Spindle – Step/Dir Spindle
20408	Step Pin Active Low	65	Axes Setup > Spindle – Step/Dir Spindle
20409	Direction Pin Active Low	66	Axes Setup > Spindle – Step/Dir Spindle
20410	Enable Relays	67	Axes Setup > Spindle – Spindle Relays
20411	M3 Active Low	68	Axes Setup > Spindle – Spindle Relays
20412	M4 Active Low	69	Axes Setup > Spindle – Spindle Relays
20413	Enable Coolant	70	Axes Setup > Spindle – Coolant Relays
20414	M7 Active Low	71	Axes Setup > Spindle – Coolant Relays
20415	M8 Active Low	72	Axes Setup > Spindle – Coolant Relays
20413	E-Stop Active Low	55	I/O Setup > General - General
20417	Probe 1 Active Low	56	I/O Setup > General - General
20418	Probe 2 Active Low	225	I/O Setup > General - General
20419	Charge Pump 1 Active Low	57	I/O Setup > General - General
20420	Charge Pump 2 Active Low	237	I/O Setup > General - General
20421	Charge Pump Always On	59	I/O Setup > General - General
20422	Current Hi/Low Active Low	60	I/O Setup > General - General
20423	Laser Active Low	211	I/O Setup > General - General
20424	Use MPG for Jog Override	148	I/O Setup > General - MPG
20425	Enable THC	81	I/O Setup > General - THC
20426	Arc On Active Low	82	I/O Setup > General - THC
20427	THC Up Active Low	83	I/O Setup > General - THC
20428	THC Down Active Low	84	I/O Setup > General - THC
20429	Control THC with no On Signal	85	I/O Setup > General - THC
20430	Enable THC Delay	223	I/O Setup > General - THC
20431	Enable THC Anti Dive	221	I/O Setup > General - THC
20432	Enable THC Anti Down	224	I/O Setup > General - THC

20433	THC Enable Active Low	238	I/O Setup > General - THC
20434	Anti Dive Active Low	239	I/O Setup > General - THC
20435	Anti Down Active Low	240	I/O Setup > General - THC
20436	Active Low #1	91	I/O Setup > I/O Triggers – Input Triggers
20437	Active Low #2	92	I/O Setup > I/O Triggers – Input Triggers
20438	Active Low #3	93	I/O Setup > I/O Triggers – Input Triggers
20439	Active Low #4	94	I/O Setup > I/O Triggers – Input Triggers
20440	Active Low #5	95	I/O Setup > I/O Triggers – Input Triggers
20441	Active Low #6	96	I/O Setup > I/O Triggers – Input Triggers
20442	Active Low #7	97	I/O Setup > I/O Triggers – Input Triggers
20443	Active Low #8	98	I/O Setup > I/O Triggers – Input Triggers
20444	Active Low #9	99	I/O Setup > I/O Triggers – Input Triggers
20445	Active Low #10	100	I/O Setup > I/O Triggers – Input Triggers
20446	Active Low #11	101	I/O Setup > I/O Triggers – Input Triggers
20447	Active Low #12	102	I/O Setup > I/O Triggers – Input Triggers
20448	Active Low #13	103	I/O Setup > I/O Triggers – Input Triggers
20449	Active Low #14	104	I/O Setup > I/O Triggers – Input Triggers
20450	Active Low #15	105	I/O Setup > I/O Triggers – Input Triggers
20451	Active Low #16	106	I/O Setup > I/O Triggers – Input Triggers
20452	Active Low #17	107	I/O Setup > I/O Triggers – Input Triggers
20453	Active Low #18	108	I/O Setup > I/O Triggers – Input Triggers
20454	Active Low #19	109	I/O Setup > I/O Triggers – Input Triggers
20455	Active Low #20	110	I/O Setup > I/O Triggers – Input Triggers
20456	Active Low #21	111	I/O Setup > I/O Triggers – Input Triggers
20457	Active Low #22	112	I/O Setup > I/O Triggers – Input Triggers
20458	Active Low #23	113	I/O Setup > I/O Triggers – Input Triggers
20459	Active Low #24	114	I/O Setup > I/O Triggers – Input Triggers
20460	Active Low #25	115	I/O Setup > I/O Triggers – Input Triggers
20461	Active Low #26	116	I/O Setup > I/O Triggers – Input Triggers
20462	Active Low #27	117	I/O Setup > I/O Triggers – Input Triggers
20463	Active Low #28	118	I/O Setup > I/O Triggers – Input Triggers
20464	Active Low #29	119	I/O Setup > I/O Triggers – Input Triggers
20465	Active Low #30	120	I/O Setup > I/O Triggers – Input Triggers
20466	Active Low #31	121	I/O Setup > I/O Triggers – Input Triggers
20467	Active Low #32	122	I/O Setup > I/O Triggers – Input Triggers
20468	Active Low #33	123	I/O Setup > I/O Triggers – Input Triggers
20469	Active Low #34	124	I/O Setup > I/O Triggers – Input Triggers
20470	Active Low #35	125	I/O Setup > I/O Triggers – Input Triggers

20471	Active Low #36	126	I/O Setup > I/O Triggers – Input Triggers
20472	Active Low #37	127	I/O Setup > I/O Triggers – Input Triggers
20473	Active Low #38	128	I/O Setup > I/O Triggers – Input Triggers
20474	Active Low #39	129	I/O Setup > I/O Triggers – Input Triggers
20475	Active Low #40	130	I/O Setup > I/O Triggers – Input Triggers
20476	Active Low #41	131	I/O Setup > I/O Triggers – Input Triggers
20477	Active Low #42	132	I/O Setup > I/O Triggers – Input Triggers
20478	Active Low #1	150	I/O Setup > I/O Triggers – Output Triggers
20479	Active Low #2	151	I/O Setup > I/O Triggers – Output Triggers
20480	Active Low #3	152	I/O Setup > I/O Triggers – Output Triggers
20481	Active Low #4	153	I/O Setup > I/O Triggers – Output Triggers
20482	Active Low #5	154	I/O Setup > I/O Triggers – Output Triggers
20483	Active Low #6	155	I/O Setup > I/O Triggers – Output Triggers
20484	Active Low #7	156	I/O Setup > I/O Triggers – Output Triggers
20485	Active Low #8	157	I/O Setup > I/O Triggers – Output Triggers
20486	Active Low #9	158	I/O Setup > I/O Triggers – Output Triggers
20487	Active Low #10	159	I/O Setup > I/O Triggers – Output Triggers
20488	Active Low #11	160	I/O Setup > I/O Triggers – Output Triggers
20489	Active Low #12	161	I/O Setup > I/O Triggers – Output Triggers
20490	Active Low #13	162	I/O Setup > I/O Triggers – Output Triggers
20491	Active Low #14	163	I/O Setup > I/O Triggers – Output Triggers
20492	Active Low #15	164	I/O Setup > I/O Triggers – Output Triggers
20493	Active Low #16	165	I/O Setup > I/O Triggers – Output Triggers
20494	Active Low #17	166	I/O Setup > I/O Triggers – Output Triggers
20495	Active Low #18	167	I/O Setup > I/O Triggers – Output Triggers
20496	Active Low #19	168	I/O Setup > I/O Triggers – Output Triggers
20497	Active Low #20	169	I/O Setup > I/O Triggers – Output Triggers
20498	Active Low #21	170	I/O Setup > I/O Triggers – Output Triggers
20499	Active Low #22	171	I/O Setup > I/O Triggers – Output Triggers
20500	Active Low #23	172	I/O Setup > I/O Triggers – Output Triggers
20501	Active Low #24	173	I/O Setup > I/O Triggers – Output Triggers
20502	Active Low #25	174	I/O Setup > I/O Triggers – Output Triggers
20503	Active Low #26	175	I/O Setup > I/O Triggers – Output Triggers
20504	Active Low #27	176	I/O Setup > I/O Triggers – Output Triggers
20505	Active Low #28	177	I/O Setup > I/O Triggers – Output Triggers
20506	Active Low #29	178	I/O Setup > I/O Triggers – Output Triggers
20507	Active Low #30	179	I/O Setup > I/O Triggers – Output Triggers
20508	Active Low #31	180	I/O Setup > I/O Triggers – Output Triggers

20509	Active Low #32	181	I/O Setup > I/O Triggers – Output Triggers
20510	Active Low #33	182	I/O Setup > I/O Triggers – Output Triggers
20511	Active Low #34	183	I/O Setup > I/O Triggers – Output Triggers
20512	Active Low #35	184	I/O Setup > I/O Triggers – Output Triggers
20513	Active Low #36	185	I/O Setup > I/O Triggers – Output Triggers
20514	Active Low #37	186	I/O Setup > I/O Triggers – Output Triggers
20515	Active Low #38	187	I/O Setup > I/O Triggers – Output Triggers
20516	Active Low #39	188	I/O Setup > I/O Triggers – Output Triggers
20517	Active Low #40	189	I/O Setup > I/O Triggers – Output Triggers
20518	Active Low #41	190	I/O Setup > I/O Triggers – Output Triggers
20519	Active Low #42	191	I/O Setup > I/O Triggers – Output Triggers
20540	Auto Zero on Probe	20309	Jog/Probe Flyout
20541	Probe Edge	20310	Jog/Probe Flyout
20542	One Time Edge	20311	Jog/Probe Flyout

Buttons

The following table lists the button numbers of buttons calling macros. The buttons call the macro associated with their number.

Button Number	Button Name/Function	Location	Other
20520	Change Tool	Run Screen	
20521	Goto Tool Change Position	Run Screen	
20522	Auto Zero Initialize	Run Screen	Activates LED #730
20523	Simple Auto Zero	Run Screen	
20524	Goto Park Position 1	Run Screen	
20525	Goto Park Position 2	Run Screen	
20552	Goto Zero	Run Screen	
20319	Toggle Softlimits	Run Screen	Toggles Checkbox #75
20528	Probe X+	Jog/Probe Flyout Screen	
20529	Probe X-	Jog/Probe Flyout Screen	
20530	Probe Y+	Jog/Probe Flyout Screen	
20531	Probe Y-	Jog/Probe Flyout Screen	
20532	Probe X+Y+	Jog/Probe Flyout Screen	
20533	Probe X+Y-	Jog/Probe Flyout Screen	
20534	Probe X-Y-	Jog/Probe Flyout Screen	
20535	Probe X-Y+	Jog/Probe Flyout Screen	

20536	Probe Boss	Jog/Probe Flyout Screen	
20537	Probe Center	Jog/Probe Flyout Screen	
20538	Probe X Pocket	Jog/Probe Flyout Screen	
20539	Probe Y Pocket	Jog/Probe Flyout Screen	
20543	Jog Increment -	Jog/Probe Flyout Screen	
20544	Jog Increment +	Jog/Probe Flyout Screen	
20546	Jog Safe Probe mode	Jog/Probe Flyout Screen	Toggles LED #246
20548	Probing Clear DRO button	Jog/Probe Flyout Screen	

Fields

The following table lists the custom fields used in the 2017 Screenset.

Field Number	Description	Screenset Location
20300	Plate Thickness	Settings > Function – Z Axis Auto Zero
20301	Clearance Plane	Settings > Function – Z Axis Auto Zero
20302	Fixed Plate X Coordinate	Settings > Function – Z Axis Auto Zero
20303	Fixed Plate Y Coordinate	Settings > Function – Z Axis Auto Zero
20304	Safe Z Height #2	Settings > General – General Settings
20305	Material Offset	Settings > Function – Z Axis Auto Zero
20351	First Probe Distance	Settings > Function – Z Axis Auto Zero
20352	Retract Distance	Settings > Function – Z Axis Auto Zero
20353	Second Probe Distance	Settings > Function – Z Axis Auto Zero
20354	First Probe Feedrate	Settings > Function – Z Axis Auto Zero
20355	Second Probe Feedrate	Settings > Function – Z Axis Auto Zero
20356	Z Axis Home Switch Clearance	Settings > Function – Z Axis Auto Zero
20357	New Tool # for “Change Tool” Button	Run Screen
20358	Fixed Plate Coordinate (Read Only)	Run Screen
20306	Tool Change X Coordinate	Settings > Function – Tool Change Position
20307	Tool Change Y Coordinate	Settings > Function – Z Axis Auto Zero
20308	Tool Change Z Coordinate	Settings > Function – Z Axis Auto Zero
20309	Jog % Increment 1	Settings > Function – Jog % Increments
20310	Jog % Increment 2	Settings > Function – Jog % Increments
20311	Jog % Increment 3	Settings > Function – Jog % Increments
20312	Jog % Increment 4	Settings > Function – Jog % Increments
20313	Jog % Increment 5	Settings > Function – Jog % Increments
20314	Jog % Increment 6	Settings > Function – Jog % Increments

20315	Jog Step Increment 1	Settings > Function – Jog Step Increments
20316	Jog Step Increment 2	Settings > Function – Jog Step Increments
20317	Jog Step Increment 3	Settings > Function – Jog Step Increments
20318	Jog Step Increment 4	Settings > Function – Jog Step Increments
20319	Jog Step Increment 5	Settings > Function – Jog Step Increments
20320	Jog Step Increment 6	Settings > Function – Jog Step Increments
20321	Park Position 1 X Coordinate	Settings > Function – Park Positions
20322	Park Position 1 Y Coordinate	Settings > Function – Park Positions
20323	Park Position 1 Z Coordinate	Settings > Function – Park Positions
20324	Park Position 2 X Coordinate	Settings > Function – Park Positions
20325	Park Position 2 Y Coordinate	Settings > Function – Park Positions
20326	Park Position 2 Z Coordinate	Settings > Function – Park Positions
20327	Park Position 3 X Coordinate	Settings > Function – Park Positions
20328	Park Position 3 Y Coordinate	Settings > Function – Park Positions
20329	Park Position 3 Z Coordinate	Settings > Function – Park Positions
20330	Park Position 4 X Coordinate	Settings > Function – Park Positions
20331	Park Position 4 Y Coordinate	Settings > Function – Park Positions
20332	Park Position 4 Z Coordinate	Settings > Function – Park Positions
20333	XY Probing Initial Feedrate	Jog/Probe Screen – Probing
20334	XY Probing Slow Feedrate	Jog/Probe Screen – Probing
20335	XY Probing Max Distance	Jog/Probe Screen – Probing
20336	XY Probing Z Clearance	Jog/Probe Screen – Probing
20337	XY Probing XY Clearance	Jog/Probe Screen – Probing
20338	XY Probing Probe Diameter	Jog/Probe Screen – Probing
20339	XY Probing Edge Length	Jog/Probe Screen – Probing
20340	XY Probing Pullback Distance	Jog/Probe Screen – Probing
20341	XY Probing Plate Offset	Jog/Probe Screen – Probing
20342	XY Probing Corner Distance	Jog/Probe Screen – Probing
20343	XY Probing X Position (Read Only)	Jog/Probe Screen – Probing
20344	XY Probing Y Position (Read Only)	Jog/Probe Screen – Probing
20345	XY Probing X Pocket Length (Read Only)	Jog/Probe Screen – Probing
20346	XY Probing Y Pocket Length (Read Only)	Jog/Probe Screen – Probing
20347	XY Probing X Pocket Center (Read Only)	Jog/Probe Screen – Probing
20348	XY Probing Y Pocket Center (Read Only)	Jog/Probe Screen – Probing
20349	XY Probing Edge Angle (Read Only)	Jog/Probe Screen – Probing
20350	XY Probing Edge dx/dy (Read Only)	Jog/Probe Screen – Probing