Software is constantly changing. Make sure you are up to date with Sukup’s newest software. New software and manuals are available for download at:

http://www.sukup.com/Products/QuadraTouch
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Pressing the “Start” button on the main screen will bring up the start menu. From here, the dryer can be used in many different drying modes, the most common of which will be continuous flow. This section will describe each mode and how it’s accessed.

Start → Continuous Flow

Continuous Flow is divided into 3 smaller processes when grain is loaded into the dryer for the first time. Initial dry essentially warms up the grain for a set period of time depending on the user input. The fans and heaters will turn on, and a timer will appear on the screen. This is essential for creating a steady flow of grain through the next step of stabilization.

To begin initial dry, the dryer needs some information to get started for the first time. To give it an idea of how long to heat the first batch of grain, enter in the values of the incoming and desired output moisture. Press “Next” to continue on to the loading phase.

Now that the dryer has been programmed with a few basic settings, we are ready to load the dryer with grain and start initial dry. After the dryer has been loaded with grain, a button will appear to start initial dry cycle.
Start → Stabilization

After Initial Dry is finished, Stabilization is the next phase of Continuous Flow Mode. Stabilization is designed to go through 1 full cycle of grain, discharging at a calculated roll speed. The first step of stabilization is to select which fans and heaters should be utilized. Heaters will not be enabled unless its corresponding fan is used.

Stabilization/Restart

All previous settings will be stored from the last time the dryer was running, so make any changes necessary on this page before calculating the stabilization speed.

The stabilization speed in the green box is the last recorded speed when the dryer was running in continuous flow mode. If the dryer was running well the last time it was used, using this value for Stabilization is recommended.

If you are currently coming out of Initial Dry, the screen will automatically switch to Stabilization mode. If you have not performed Initial Dry, the load menu will appear. After the dryer has been loaded with grain, a button will appear to start Stabilization.
Dry Fire mode allows the dryer to turn its fan(s) and heater(s) on when the dryer is empty. This mode should be run every year before operation to test for functionality. Be sure to inspect each heater and pipe train for component integrity and functionality.

Dry Fire mode lasts for 10 minutes and that status of the signals will be displayed. When the dryer is empty, the air switch will most likely not be closed.

Final Dry mode is used to finish off the last “batch” when there is no more grain to dry in continuous flow. The dryer will batch dry the last grain in the dryer, then turn its fan(s) and heater(s) off and unload the dryer for a set period of time.

Final Dry mode will automatically exit when the timers have expired.
Due to very high moisture content, Auto Batch mode may be required. After selecting Auto Batch, the system will prompt you about restarting from the last batch. If no previous batch has been recorded, it will start you from the new batch settings.

Choose the heat or heat/cool operation and control method.

Based on your settings, the dryer will calculate a base point to start from.
Start → Auto Batch

Auto Batch will start with the Dry Cycle. After the timer expires, the Cool Cycle will be used (if heat/cool operation was selected), then the dryer will start unloading the batch.

Start → Auto Batch

The Unload Cycle can be paused during operation, but needs to be resumed before the next cycle starts. Each of the mode times can be changed using the settings menu.
Settings Menu

The Settings menu houses most of the drying settings that are commonly used during operation.

Settings → Plenum Temperature

The Plenum Temperature menu contains settings for each individual plenum/heater.

Settings → Plenum Temperature → Min/Max

The minimum and maximum plenum temperatures can be found here. When choosing the low temp option, the values can be adjusted even further.

Settings → Plenum Temperature → Low Temp Option

If enabled, the low temp option allows the plenum to be set as low as 100°F. It may result in permanent damage if a low temp kit is not installed in the dryer. The port cup and orifice may need to be changed out on axial fan heaters.
The Meter Roll Settings (Unload Settings for Tower Dryers) contain the minimum and maximum speed settings as well as loop control settings.

**Settings → Meter Roll Settings → Min/Max**

The minimum and maximum settings dictate how fast or slow the system is capable of running. Make sure to never unload faster than your takeaway system is capable of running.

**Settings → Meter Roll Settings → Moisture Gain**

The Moisture Loop Gain settings are important for optimum operation when discharging, based on moisture. Choosing a higher setting will mean more aggressive changes in a shorter amount of time. When the dryer is running at slower speeds, this number should stay around 40 or so. Conversely, at higher speeds, it may yield better control to boost this setting up higher.

**Settings → Meter Roll Settings → Meter Roll Deadband**

For some systems, it may be preferable to lock in the unload speed when grain is discharging very near the target setpoint. This is referred to as the loop deadband.
Settings → Meter Roll Settings → Temperature Gain

The Temperature Gain settings are important for optimum operation when discharging based on temperature. Choosing a higher setting will mean more aggressive changes in a shorter amount of time. When the dryer is running at slower speeds, this number should stay around 40 or so. Conversely, at higher speeds, it may yield better control to boost this setting up higher.

Settings → Meter Roll Settings → Temperature Deadband

For some systems, it may be preferable to lock in the unload speed when grain is discharging very near the target setpoint. This is referred to as the loop deadband.

Settings → Heat Delay Timer

Sometimes, it may be necessary to put a delay between when the fan starts, and when power is applied to the heater box.

Settings → Moisture Settings

The moisture settings are important for internal calculations as well as the target moisture for grain discharge. These can be accessed almost anytime the dryer is running.
**Settings → Fan Shutdown Delay**

In addition to the standard 3-second fan shutdown delay, additional time can be added to cool off the grain when stopping operation or fault shutdowns that aren’t related to temperature or direct safety.

**Settings → Fan Start Delay**

This setting dictates the amount of time between fan starts. Stretching this time out may be a good idea if power is limited or motor current draws are very high.

**Settings → EMOV Settings**

The electronic mod valve settings generally never need to be touched, however, if needed, they are here. The Low Fire Position is the percentage the valve stem will be open when heater ignition takes place.

**Settings → Unload Delay**

During operation, it sometimes becomes necessary to shut the unload system down to change takeaways, air system distributors, or like situations. This timer will begin counting when the unload is paused, and will cause a fault condition if the unload isn’t resumed in time.
Settings → Out of Wet Grain Timer

Defaultered to 10 minutes, this timer begins counting when both paddle switches are down (calling for more grain) and will trigger a fault condition if they aren’t satisfied within that period of time.

Settings → Fill Timer

Defaultered to 15 minutes, this timer begins counting when the paddles switches are satisfied and haven’t dropped back down. This timer will trigger a fault condition if it expires before the switches drop down again.

Settings → Load Delay

The Load Delay timer is an additional period of time put between when the load auger starts and when the auxiliary devices are energized.

Settings → Unload Cleanout

Additional time for the unload auger to run after a standard shutdown. It provides an opportunity for the unload to clean itself out before shutting down.
Settings → Set Defaults

If the need ever arises, setting defaults will return all values in the QuadraTouch Pro panel back to factory default settings.
Tools Menu

The Tools menu provides many helpful system settings and options to enhance the drying experience. From using the GSM modem to looking at live and historical graphs, the Tools menu is an important section of the QuadraTouch Pro platform.

Tools → Calibrate Sensors

The dryer’s moisture sensor(s), as well as the bushel counter, can be calibrated here. The bushel counter must be calibrated in order to access the counting and bushel shutdown features shown in the Tools menu.

Tools → Calibrate Sensors → Discharge Moisture

The dryer’s moisture sensor may need to be calibrated during operation. It’s important that the dryer is operating under good, usable data.

In a nutshell, the dryer will tell you when to go take a sample -- a period of 10 seconds after you are ready to sample. Take a bucket out to the discharge of the dryer and get samples over the course of the next minute. Then enter those samples in on the next page. The dryer retrieves data stored during the previous minute, and then compares it with your data.
Tools → Calibrate Sensors → Discharge Moisture

1-minute sampling period

The Locked, Uncalibrated Moisture value is what the sensor recorded over the past minute. Fill in the 5 values on the left with samples you have taken from the bucket. The dryer will do the math for you and store the calibration.

Tools → Calibrate Sensors → Bushel Counter

The bushel counter can be calibrated automatically or manually. Automatically is generally the most accurate way to calibrate the counter.

In automatic bushel counter calibration, the dryer needs to be discharging grain into a measurable space like a grain cart or semi load. Press the timer button to start the timer, then when the load is finished, press it again to stop the timer. Then enter the amount of bushels discharged during the time period. The dryer will do the bushel calculation for you.
In manual bushel counter calibration, the user inputs a meter roll speed and an approximate yield at that speed. The dryer will do the bushel/hr calculation for you.

**Tools → History Log**

The history log contains all the alarms, settings changes, and fault history of the dryer.

**Tools → Graphs**

The QuadraTouch Pro system allows the user to look at graphs both in real-time and historical methods. Because this screen can contain a lot of data, a stylus may be required to touch the small sections of the screen.

You can also build your own graph where multiple values can be compared.
Tools → GSM Options

If equipped, the GSM modem options give you an opportunity to receive text alerts from the dryer. Up to 2 people can receive them. Further information on the GSM modem can be found by pressing the .PDF logo on this page. It contains installation and operational instructions.

New with QuadraTouch Pro, there is also a GSM diagnostics section that helps with first time setup to ensure the modem is operating correctly.

Tools → Auto Temp Adjust

If enabled, the Auto Temp adjust feature will turn down the temperature inside the plenum when the dryer reaches its upper roll speed limit. Therefore, when the dryer is trying to run faster than is allowed, it will automatically turn down its drying temperature.

Tools → Language Selection

Coming 2016
The System Diagnostics menu provides an overview of all the main system signals and those of the ones relating to the individual fan(s) and heater(s). A green light means that that circuit has 24vdc on it. This menu can be accessed at almost any time by pressing on the SUKUP logo on the top left of your screen.

The individual fan inputs/outputs are shown here.

The QuadraTouch Pro system provides real-time feedback of all the analog input sensors and output reference signals. Pressing “Plenum Diagnostics” will show each plenum feedback value, and the reference signal and percentage opening on the EMOV.

Values for each individual plenum are shown here.
Tools → System Tools

The System Tools menu is very important to the QuadraTouch Pro system. It provides a wide range of functionality and has many features that help maintain and update the system.

Tools → System Tools → QuadraTouch Update

Download the newest QuadraTouch Pro software from our website, extract the contents. You will find a folder called “project” in the extracted contents. Copy that folder onto the root directory of a USB stick. Insert that stick into the external USB port of the QuadraTouch Pro (located on the bottom of the box), and press “Step 1” – if the files were put onto the USB stick correctly, the file transfer will begin automatically.

After the QuadraTouch Pro has restarted, it will prompt you to perform step 2. Here, you’ll select which PLC is being programmed. Make sure the PLC setup you choose matches what’s inside the power cabinet! If you choose the wrong one, it will tell you, and get you back to programming page to try again.

Tools → System Tools → System Information

This page shows the software versions of the PLC and the HMI. They are released together, so they should always match. If the HMI version is older than the PLC version somehow, make sure to perform a QuadraTouch™ update.
Tools → System Tools → Time and Date

Set system time and date information. It will be used for all graphing and historical data.

Tools → System Tools → Dryer Type

The QuadraTouch Pro software contains enough information to run an 8’ single fan dryer and a 10,000 bu/hr Tower Dryer. Your system should be factory-preset for your specific dryer, but if needed, you can select that here. The QuadraTouch Pro needs to be restarted when changing this setting. It will do so automatically.

Tools → System Tools → Admin Tools

The Admin Tools menu provides the option to change critical settings inside the QuadraTouch Pro environment.

**NOTICE:** DO NOT CHANGE any of these settings without thorough knowledge of dryer operation and very close attention to detail. Changing settings and/or using the overrides can result in permanent damage to the dryer!

Tools → System Tools → Admin Tools → Bus Diagnostics

This section provides critical information about the PLC. This menu would only need to be accessed in the event of a PLC or I/O card failure.
Tools → System Tools → Admin Tools → Bus Diagnostics → PLC Bus View

This shows a picture of your PLC and identifies any problems with it. In the event a device is not functioning properly, it will be highlighted for easy serviceability.

Tools → System Tools → Admin Tools → Bus Diagnostics → Master Diagnostic Bit View

The information contained here will most likely only be needed by a Sukup Service Technician.

Tools → System Tools → Admin Tools → Load System Override

Sometimes it becomes necessary to run the load auger or auxiliary devices independently of each other irrespective of the paddle switch position. This mode allows you to do that. However, permanent damage can occur if it’s not used properly.

Tools → System Tools → Admin Tools → Air Switch Timer

The air switch will need to be satisfied within 5 seconds after the fan contactor closes. With a Soft Start, the air switch is given until the fan reaches run state. In the event that the fan doesn’t get up to speed during that amount of time, this timer can be adjusted to allow for longer ramp time.
In the event the heater ignition isn’t taking place within 45 seconds of heater power, a longer flame fault time may be needed.

This feature allows the user to select how much time delay takes place between when the load auger, aux 1, and aux 2 relays are pulled in. This feature is especially helpful in large incline situations.

During Dry Fire mode, the heater will ignite, but wait a period of time before allowing the EMOV to take control of burner temperature. This time delay can be used to set the STEM valve of each heater. The factory setting is 5 PSI at low fire of 25% open.

Here is a quick menu to calibrate the column RTD if equipped. This sensor is generally very accurate, so exercise caution when adjusting this value.
Here is a quick menu to calibrate the discharge grain temp on the moisture sensor. This sensor is generally very accurate, so exercise caution when adjusting this value.

Here is a quick menu to calibrate the individual Plenums. These sensors are generally very accurate, so exercise caution when adjusting these values.

The QuadraTouch Pro System is equipped with many special Apps to make operation as reliable as possible. Most of these tools will never need to be used, but in the event they are needed, they are preloaded on your system for added convenience.

The IP Assign tool is used to give a PLC an IP address when it’s reset to out-of-box condition. Consult your dealer before using this tool. A USB keyboard will be needed.
Tools → System Tools → Maintenance Menu → Launch Touch Calibration

In the event the cursor doesn’t align exactly where your finger touches the screen, you can easily calibrate the touch panel to your desired specifications. Choose “Launch Touch Calibration” to open the calibration screen.

Touch the 4 Corners on the panel calibration shown left.

Tools → System Tools → Maintenance Menu → Mobile App Code

Coming in 2016: a full-blown remote access interface will be available from any phone or tablet. Directly access and partially control your dryer from anywhere in the world.

Tools → System Tools → Maintenance Menu → Comm Check

This value should read 192 when the OPC server is running. The xPLC Toggle Bit should be turning ON and OFF when the PLC and Touch Panel are talking to each other.
Here, entire copies of the system manuals and wiring diagrams can be found. Information related to specific components and frequently asked questions is located here.
Tower Dryer Operation

When operating the Tower Dryer, the program flow is similar to that found on previous pages for portable dryers, with a few exceptions. They are described here.

The first key difference is in the “Start” menu. It will prompt you to answer if the burner tarp has been removed.

Choosing Control Method

In Tower Operation, you will first choose the control method (automatic or manual). The control method can be changed by pressing either of the two red rectangles.

Choose how you’d like to operate the Tower Dryer.

Automatic Operation

Choosing Automatic Operation, the larger of the two red rectangles disappears, leaving the controls for the load and unload systems, fan(s) and heater.

Notice to the right there is a blinking button indicating you are discharging based on moisture or grain column temperature.
Changing from Moisture to Temperature Control

Toggling the blinking button will change from moisture to temperature control. You’ll notice the temperature setpoint will appear on the bottom in place of the moisture setpoint.

Manual Operation

Choosing the red rectangle, you can change the operation method to manual operation, as shown here. Notice the temperature and moisture setpoints are removed, and they are replaced with a manual unload speed setting.

Turning the load, unload, fan(s), and heat on, you can see the devices turning on in order. The fans will start up in sequence along with the load and unload systems. An animated blue flame will show up when the burner control unit senses flame.

As soon as the unload table has started, any applicable countdown timers will be displayed. Notice the Fill Timer displayed in the bottom center of the screen.
Settings Menu

The settings menu is relatively the same as the portable dryer software with an exception at the bottom of the page for load and unload auxiliary timers. (Settings menu for portable dryers begins on page 9 of this Software Manual.)

Time delays between load auxiliaries can be programmed here.

Time delays between unload auxiliaries can be programmed here.

Tools ➔ System Tools ➔ Maintenance Tools ➔
Configure Aux Input

New for QuadraTouch Pro, the available analog input can be configured for an additional temperature readout or static air pressure sensor. Ask your local Sukup dealer about this feature.