



Bin Filling System

Operating Manual

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CONTROL FEATURES

- **Recipes** – Edit/Load up to 50 unique recipes
- **User Defined Timers** – Timers can be adjusted to the user's preferred settings
- **Alarms** – Faults and warnings prompt windows with solutions
- **Maintenance** – Monitor inputs and test outputs
- **Password Protection** – Enable password protection to lock system systems & saved recipes

AUTO MODE SEQUENCE

The auto mode sequence is initiated by pressing *System Mode* button, located on the *main screen*. Bin counts from the previous cycle are retained at power off; the system resumes the previously running cycle. The sequence repeats as followed.

SINGLE BIN OPERATION

- The Z-style infeed conveyor starts
- Parts are counted as they pass the part sensor (System Status = Bin1 Filling)
- *Current Count* \leq *Near Full Count*; the yellow alarm light & buzzer turn on (System Status = Bin1 Near Full)
- *Current Count* \leq *Target Count*; the *Current Count* is reset, and user defined *Chute Delay* timer starts (System Status = Bin1 Count Reached)
- The *Chute Delay* timer reaches is setpoint; the chute door closes, and the Z-style infeed conveyor delays off via distance calculated by the motor encoder
- The Z-style infeed conveyor clears; the red light turns on (System Status = Bin1 Full)
- The operator can now switch out bins and reset the system by pressing *Bin1 Reset*, in the alarm window
- *Chute Count* \leq *Chute Full Count*; the chute opens, and the Z-style conveyor delays off via distance calculated by the motor encoder
- The Z-style infeed conveyor stops as the parts reach the motor end, and the chute door closes (System Status = Bin1 & Conveyor Full)
- *Chute Count* \leq *Chute Full Count*; the chute opens, and the Z-style infeed conveyor starts (System Status = Bin1 Overfill). The bin is now overfilled & the count is incorrect. The Z-style infeed conveyor must be cleared of all parts before by pressing *Bin1 Reset*, in the alarm window

TWO BIN OPERATION

- The Z-style infeed & Divert conveyors start
- Parts are counted as they pass the part sensor (System Status = Bin1 Filling, Bin2 Ready)
- *Current Count* \leq *Near Full Count*; the yellow alarm light & buzzer turn on (System Status = Bin1 Near Full, Bin2 Ready)
- *Current Count* \leq *Target Count*; the *Current Count* is reset, and user defined *Chute Delay* timer starts (System Status = Bin1 Count Reached, Bin2 Ready)
- The *Chute Delay* timer reaches is setpoint; the chute door closes, and the Z-style infeed conveyor delays off via distance calculated by the motor encoder
- The Z-style infeed & Divert conveyors clear; the Divert conveyor switches to the opposite bin direction, the Z-style infeed conveyor resumes running, the chute door opens, and the red light turns on (System Status = Bin1 Full, Bin2 Filling)
- The operator can now switch out bins and reset the system by pressing *Bin1 Reset*, in the alarm window
- Parts are counted as they pass the part sensor (System Status = Bin1 Full, Bin2 Filling)
- *Current Count* \leq *Near Full Count*; the yellow alarm light & buzzer turn on (System Status = Bin1 Full, Bin2 Near Full)
- *Current Count* \leq *Target Count*; the *Current Count* is reset, and user defined *Chute Delay* timer starts (System Status = Bin1 Full, Bin2 Count Reached)
- The *Chute Delay* timer reaches is setpoint; the chute door closes, and the Z-style infeed conveyor delays off via distance calculated by the motor encoder
- The Z-style infeed & Divert conveyors clear; the red light turns on (System Status = Bin1 Full, Bin2 Full)

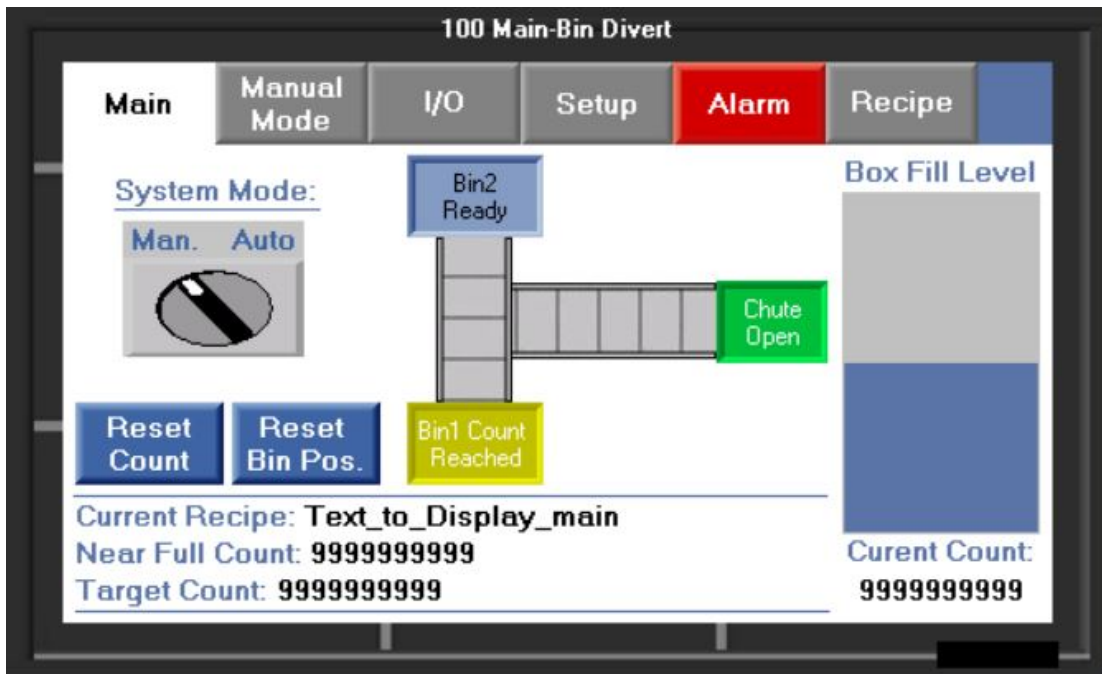
- *Chute Count* <= *Chute Full Count*; the chute opens, and the Z-style infeed conveyor delays off via distance calculated by the motor encoder
- The Z-style infeed conveyor stops as the parts reach the motor end, and the chute door closes (System Status = Bin1 Full, Bin2 Full, & Conveyor Full)
- *Chute Count* <= *Chute Full Count*; the chute opens, and the Z-style infeed & Divert conveyors start (System Status = Bin1 Full, Bin2 Overfill). Bin2 is now overfilled & the count is incorrect. The Z-style infeed conveyor must be cleared of all parts before by pressing *Bin2 Reset*, in the alarm window

HMI OVERVIEW

- **Main** – Operators can view system cycle status and toggle between auto and manual mode
- **Recipes** – Recipes may be viewed. Logging in allows user to edit, create, and delete recipes
- **Setup** – Operators can adjust system parameters
- **Manual** - Operators can jog conveyors, move the lift, and tare the scale
- **Inputs & Outputs** – Used to troubleshoot inputs and outputs
- **Alarms** – Operators can view alarm status. Alarms may also be cleared here

MAIN SCREEN

The main screen of the HMI will display on startup of the system as shown below. From here, the operator can choose to put the system into auto or manual mode and can also view the current recipe and its parameters. Additionally, on startup, the system will be in manual mode and a recipe must be loaded to switch to auto mode.



RECIPE SELECTION

While in manual mode, when the *Recipe Tab* is selected, the following screen will be visible. Browse through all recipes using the arrow buttons. The current recipe is what will be used in auto mode. By pressing *Edit Recipe* and logging in with the password “1234”, the operator can edit, create, and delete existing recipes.



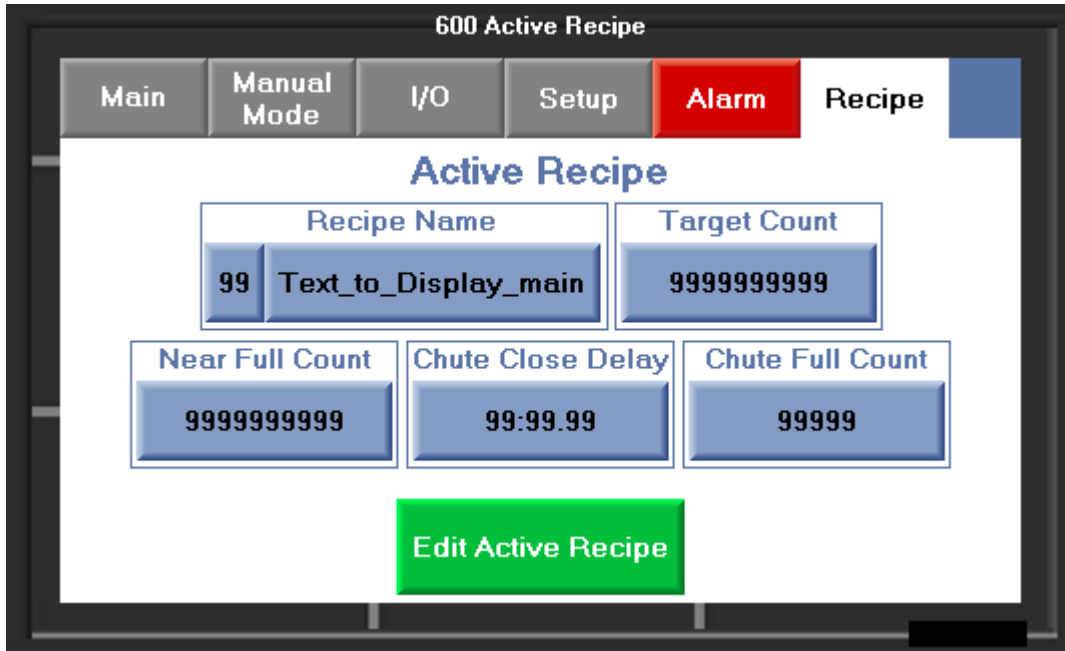
EDIT RECIPE

Once logged in, the *Edit Recipe* screen will appear as shown below.



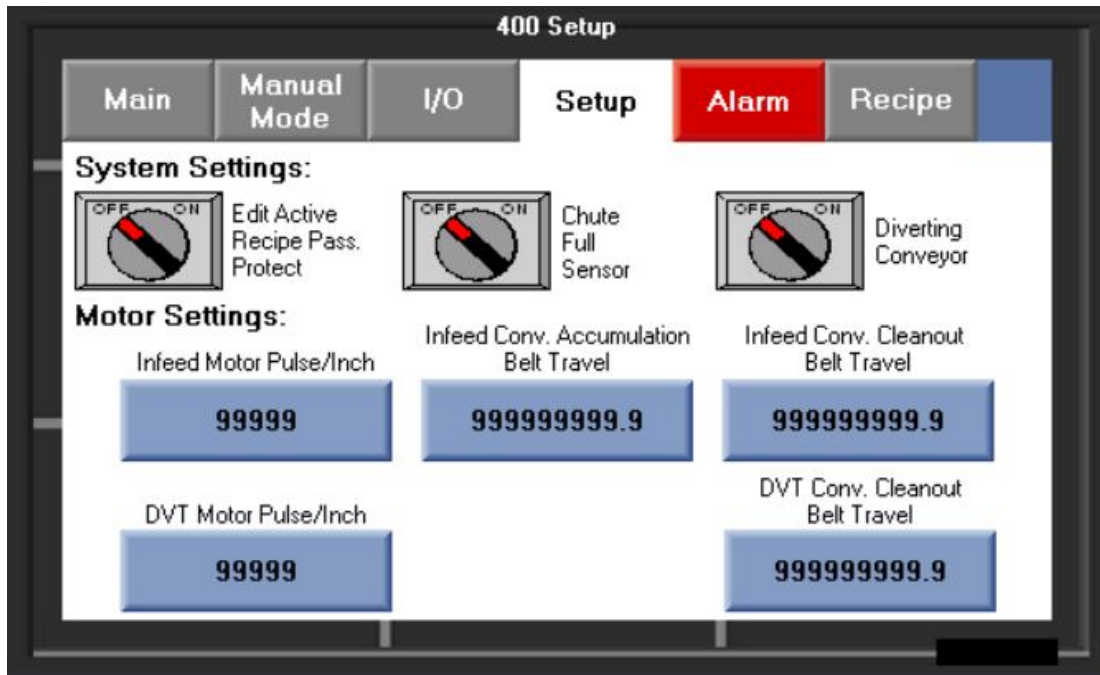
ACTIVE RECIPE

While in auto mode, when the *Recipe Tab* is selected, the following screen will be visible. This screen is used for making on the fly recipe changes. Changes made is this screen are only active during the duration of the current recipe. Permanent changes to the recipe must be made in the *Edit Recipe* screen.



SETUP

When the *Setup Tab* is selected, the following screen will be visible, and the operator will have to login by entering a username and password. To login to the user setup screen, the password “1234” must be used.

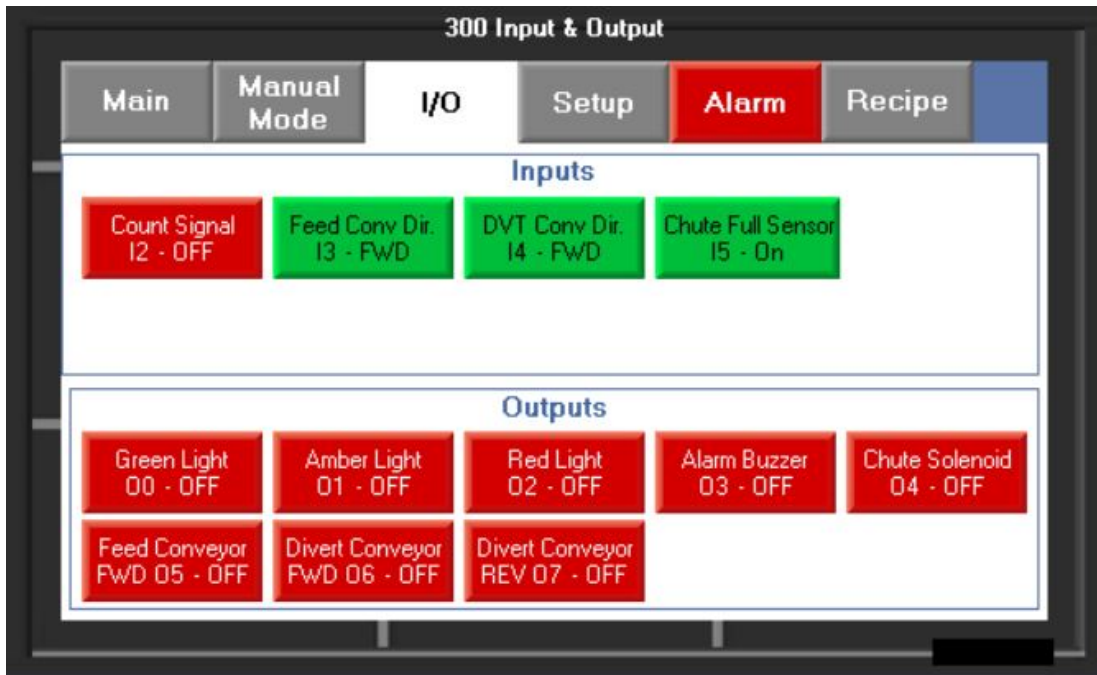


Each of the delays are described below:

- Edit Active Recipe Pass Protect – Requires the operator to enter a password to adjust the currently running recipe parameters.
- Chute Full Sensor – Toggle to on when using a sensor to detect when the chute is full.
- Diverting Conveyor – Toggle on when using a diverting conveyor to fill 2 bins.
- Infeed motor Pulse/Inch – Encoder setting for the Infeed conveyor. This setting should be kept at the factor default. Failing to do so will cause the system to malfunction.
- Infeed Conv. Accumulation Belt Travel – The distance, set in inches, that the Z-style infeed conveyor accumulates the parts dropped after the infeed conveyor chute is full and has released parts. Factory set to the distance from the front of the hopper to the end of the conveyor.
- Infeed Conv. Cleanout Belt Travel – The distance, set in inches, that the Z-style infeed conveyor runs after the “Target Count” has reached its setpoint. Factory set to half the conveyor belt length.
- DVT motor Pulse/Inch – Encoder setting for the flat bin diverting conveyor. This setting should be kept at the factor default. Failing to do so will cause the system to malfunction.
- DVT Conv. Cleanout Belt Travel – The distance, set in inches, that the flat bin diverting conveyor runs after the *Target Count* has reached its setpoint. Factory set to half the conveyor belt length.

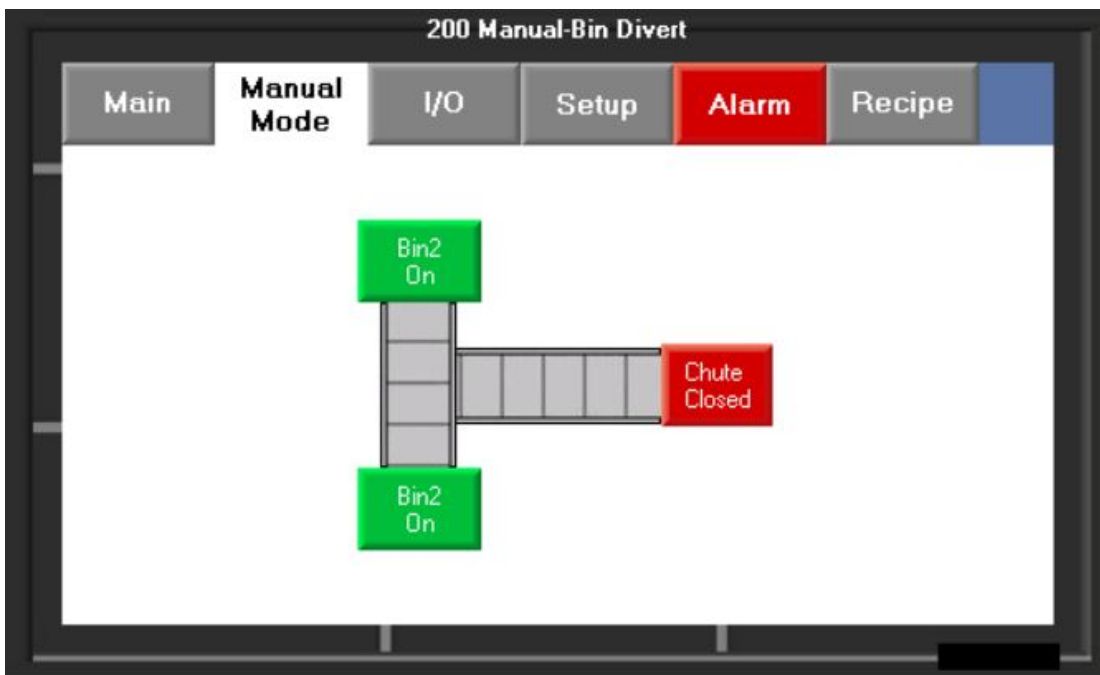
INPUT & OUTPUTS

When the *I/O* tab is selected, the following screen will be visible. Input buttons light on when they are on and the outputs can be turned on from this screen while in manual mode.



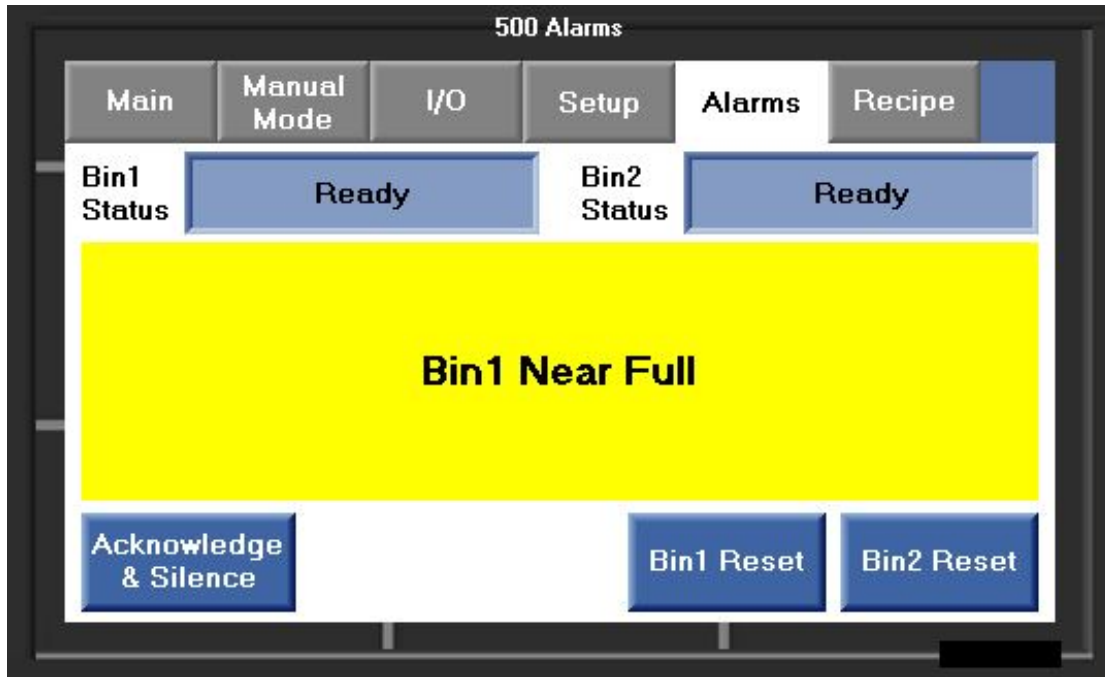
MANUAL MODE

When the *Manual Mode* tab is selected, the following screen will be visible. While in Manual Mode, the operator can turn on the infeed and diverting conveyor(s) by selecting the appropriate bin.



ALARM CONDITIONS

When the *Alarm Tab* is selected or there is an active alarm, the following screen will be visible. If the green light is illuminated, the system is running properly without any faults or warnings.



FAULTS

When active, the Red light will illuminate and the system will continue to run, but the buzzer will continue to sound until the alarm condition is acknowledged.

- Bin Full – Replace full bin and press *Bin Reset*
- Bin & Conveyor Full – Replace full bin and press *Bin Reset*
- Bin overfill – The bin count has been compromised. Remove all parts from the conveyor(s), replace bin, and press *Bin reset*

WARNINGS

When active, the amber light will illuminate and the system will continue to run, but the buzzer will continue to sound until the alarm condition is acknowledged.

- Bin Near Full – The currently filling bin is nearing the target setpoint
- Bin Count Reached – The *Target Count* has reached its setpoint.