Mini III Pump Programmable Controller

User Guide

Contents

Introduction

The Mini III system is made up of a controller unit, servo motor driven pump and various cables. Software (included with the controller) facilitates manual or automatic and local or remote operation of the pump.

The pump dispenses various sizes of material (dots and lines). The control software also allows for combinations of objects (dots and lines) to be combined into a series of program steps with dot size, rates, accelerations and number of objects (count). Programs are recalled by a number and executed as necessary to dispense an organized group of objects.

Each program is an array of object lines that can be executed one at a time up to the last line. After the last line is finished, the pointer returns to the beginning and the program starts at the beginning. A reset push button is available to move the program pointer to the beginning of the program at anytime.

The controller can also be operated in a manual mode as well as the program mode described above. There is a manual purge and a timed purge push button. The manual purge dispenses material as long as the button is held. Timed purge button causes the dispensing of material for a preset amount of time.

To facilitate the remote control of the Mini III controller, an interface connector can be connected to a pump start input and a pump status output signal. To use the remote signals, the auto/manual selector must be in the auto position. The selector is located on the setup screen.

Finally, motor control cables (power, encoder and a remote I/O cable) are included to complete the package.

GPD Global®
611 Hollingsworth Street, Grand Junction, CO 81505
tel +1.970.245.0408 • fax +1.970.245.9674 • www.gpd-global.com

Operator Interface

Main Screen

Figure 1: *Main Screen*

Initially, the GPD Global logo displays. The Main Screen displays 15 to 20 seconds after the power switched is turned on.

MANUAL PURGE

Pressing the MANUAL PURGE button causes the system to dispense. Releasing the button stops dispensing. The button is inoperable if the system is currently dispensing a dot or line.

When the MANUAL PURGE is pressed, the pump accelerates up to the speed defined in the PUMP SPEED parameter on the PURGE screen, in the time defined in the ACCEL parameter (refer to Figure 3 on page 6). The pump continues at this speed until MANUAL PURGE is released, at which time the pump decelerates to a stop, in the time defined in the ACCEL parameter. The direction of pump motor rotation is defined by the FORWARD / REVERSE selector switch (refer to Figure 2 on page 4).

The TIMED PURGE button is a maintained button - the label changes to END PURGE when actuated. The same pump purge profile, as described in the preceding paragraph, is executed, only it automatically stops the purge when the time defined in the PURGE TIME parameter (refer to Figure 3 on

page 6) has expired. The END PURGE button can be actuated at any time to stop the purge before PURGE TIME has expired.

When the pump is purging, the “STOPPED” indicator changes to “MOVING.”

SYSTEM OK

The “SYSTEM OK” indicator lets the user know that the system is functioning properly. When this indicator displays “SYSTEM FAULTED”, the user will not be able to run the pump.

The user should first try recycling the power to the controller. If the alarm stops but reappears when the system is again asked to pump, an obstruction may be keeping the pump motor from turning. If the alarm does not stop after cycling power, then call for service.

RESET

A program RESET button displays on the main screen if the SINGLE/PROGRAM selector switch on the SETUP screen is in PROGRAM position (refer to Figure 2 on page 4). When pressed, this button will reset the STEP number and COUNT number to one and zero, respectively. Pump operation starts at the beginning of the selected program.

SETUP PASSWORD

The PASSWORD parameter in the SETUP screen (refer to Figure 2 on page 4) allows the user to access all of the system parameters. A numeric keypad displays when the button on the object is pressed. The user can then enter a password of any number between 0 and 9999. If the user enters a correct password, the SETUP and CHANGE PASSWORD buttons become visible for approximately 3 seconds. The user can press the SETUP button to enter the SETUP screen or the CHANGE PASSWORD button to enter the CHANGE PASSWORD screen. If the user chooses not to press one of these buttons within the three second time period, then the buttons disappear and the password is reset.

The original password is 2626.

STOPPED

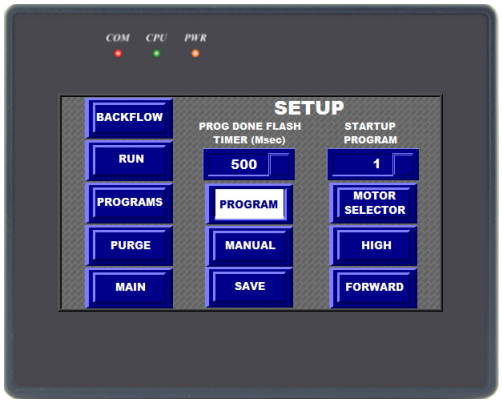
The STOPPED indicator displays MOVING when the pump is “purging” or dispensing a dot. The indicator reverts back to the STOPPED position when the pump stops.

PROGRAM DONE

The “PROGRAM DONE” indicator flashes after the last count of the last step in a program is completed. Some flash time is required to cause the flasher to operate (refer to Figure 2 on page 4). The program done flash time will reduce the maximum program cycle rate of the Mini III controller.

Setup Screen

Figure 2: *Setup Screen*



MANUAL / AUTO

The MANUAL/AUTO selector switch allows the user to initiate a dot or line either from the PUMP button in the RUN/VIEW screen (when the switch is in the MANUAL position) or from the RQST signal wired to the interface connector (when the switch is in the AUTO position).

The state of this switch can be saved to flash memory in the controller using the SAVE button in the SETUP screen and the SAVE button in the CHANGE PASSWORD screen.

SINGLE / PROGRAM

When the SINGLE/PROGRAM selector switch is in the:

> **SINGLE** position, the user, when requesting a dot or line, will pump according to what is specified in the SIZE, PUMP SPEED, and ACCEL TIME parameters in the RUN VIEW screen.

> **PROGRAM** position, the user, when requesting a dot, will pump according to what is specified in the program (see Program Data Screen (pg 9) for more details).

PROG DONE FLASH

The PROG DONE FLASH allows the user to adjust the blink rate of the program Done signal. At the end of a program, the pump signal flashes to indicate the program is complete.

The state of this switch can be saved to flash memory in the controller using the SAVE button in the SETUP screen and the SAVE button in the CHANGE PASSWORD screen.

FORWARD / REVERSE

The FORWARD / REVERSE selector switch allows the user to change the direction of the pump motor rotation during any pump action (dot, line or pump purging). In the FORWARD position, the pump motor shaft turns clockwise when looking at

the motor shaft. In the REVERSE position, the pump motor shaft turns counter-clockwise.

The state of this switch can be saved to flash memory in the controller using the SAVE button in the SETUP screen and the SAVE button in the CHANGE PASSWORD screen.

HIGH / LOW

The HIGH / LOW selector switch changes the state of the external input signal (Request To Pump).

IMPORTANT: This selector switch should not be changed unless the wiring is set for low to high transitions. Refer to Figure 18 on page 21 for details about the interface connector. If you change the setting on the “Setup Screen” from High (Open Switch) to Low (Open Switch) **without also changing the wiring** to the Mini III Programmable Controller, it will pump a single dot and stop as soon as you make the selection. The switch position is saved when selected, so it will not change back to High (Open Switch) when you recycle power - you must manual change the switch back to High position.

STARTUP PROGRAM

The STARTUP PROGRAM number parameter defines which of the 10 available programs will run whenever the system is powered up. A numeric keypad displays when the button in the parameter is pressed and the user can then change the startup program number to any number between 1 and 10. The setting of this parameter can be saved to flash memory in the controller using the SAVE button in the SETUP screen and the SAVE button in the CHANGE PASSWORD screen.

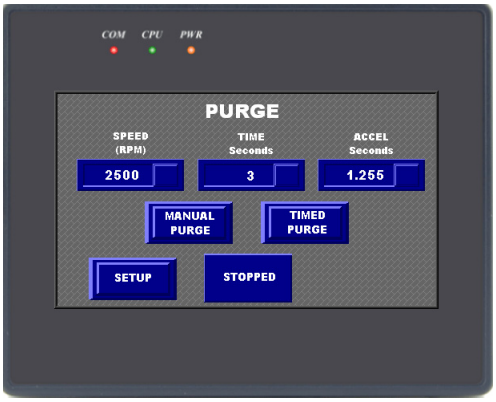
SAVE

The SAVE button writes all controller parameters to flash memory. The parameters are not lost after a power cycle. After the button is pressed, the saving process begins; it typically takes about 3 seconds to complete. During this time, the button flashes “SAVING”. When the button returns to its normal state, the save is complete. The following parameters are “saved”:

- The state of the MANUAL / AUTO switch, SINGLE/PROGRAM switch, the FORWARD/REVERSE switch, and the HIGH/LOW switch - all from the SETUP screen.
- All “programs” entered via the PROGRAM DATA screen.
- The PUMP SPEED and PURGE TIME parameter values from the PURGE screen.
- New system PASSWORD.
- The power-up program number as defined in the STARTUP PROGRAM number parameter and the BLINK TIME from the SETUP screen.
- The column of buttons on the left side of the screen allows the user to go to the indicated screen.

Purge Screen

Figure 3: *Purge Screen*



MANUAL PURGE

Pressing the MANUAL PURGE button causes the system to dispense (purge) material. Releasing the button stops the dispensing.

NOTE: This button is inoperable when the system is currently pumping a dot or line.

When the button is pressed, the pump accelerates up to the speed defined by the PUMP SPEED parameter, in the time entered in the ACCEL TIME parameter. The pump continues at this speed until the button is released, at which time the pump decelerates in the same time used for acceleration. The direction of motor rotation is defined by the FORWARD/REVERSE selector switch in the SETUP screen.

NOTE: The numeric keypad displays when the button on the SPEED parameter is pressed. The user can then change the desired pump purge speed to any number between 1 and 4000 motor revolution per minute.

TIMED PURGE

Pressing the TIMED PURGE button causes the system to dispense for the time set in the TIME parameter. Pressing this button also makes the STOP PURGE button visible. The STOP PURGE button can be used to end the “Timed Purge” before the time expires.

NOTE: These buttons are inoperable when the system is currently pumping a dot.

NOTE: The direction of the pump and its acceleration and deceleration are specified in the same way as the MANUAL PURGE button.

A numeric keypad displays when the button in the PURGE TIME parameter is pressed. The user can then change the desired purge time to any number between 1 and 999 seconds.

STOPPED

The STOPPED indicator displays MOVING when the pump is dispensing. The indicator reverts back to STOPPED when the pump stops.

SETUP

The SETUP button returns the user to the SETUP screen.

Change Password Screen

Figure 4: *Change Password Screen*

NEW PASSWORD

The NEW PASSWORD parameter is used to enter a new password to access the protected screens. A numeric keypad displays when the button in the parameter is pressed and the user can then change the password to any number between 1 and 9999.

NOTE: The new password becomes active when entered, but will not be used on the next power-up unless saved with the SAVE button on this screen or the SETUP screen.

SAVE

The SAVE button works the same way as the SETUP screen SAVE (pg 5) button.

MAIN

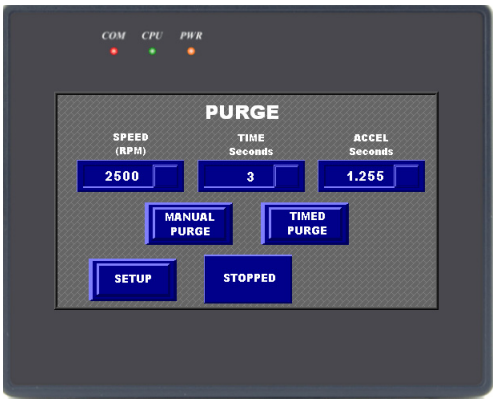
The MAIN button returns the user to the opening screen.

SETUP

The SETUP button navigates the user to the SETUP screen.

Programs Screen

Figure 5: *Programs Screen*



PROGRAM

The PROGRAM number parameter on this screen is used to access one of the ten stored programs in the system. A numeric keypad displays when the button in the parameter is pressed. The user can then change the program number to any value between 1 and 10.

EDIT PROGRAM

The EDIT PROGRAM button navigates the user to the PROGRAM DATA screen where the program selected in the PROGRAM number parameter can be viewed and/or changed.

SETUP

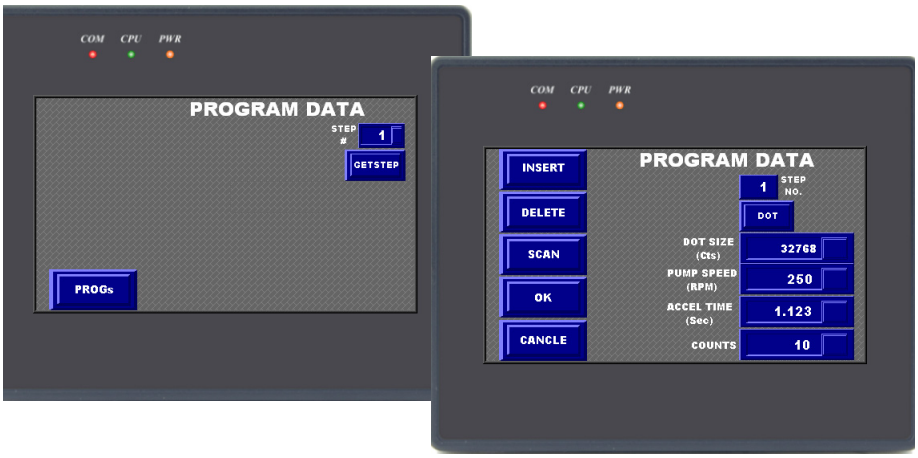
The SETUP button navigates the user back to the SETUP screen.

CLEAR PROGRAM

Pressing the CLEAR PROGRAM button makes all buttons invisible except the PRESS TO CLEAR OR WAIT 5-sec button. If the user does not press this button within 5 seconds, the screen resets. If the user presses this button, all data in the program set in the PROGRAM number parameter will be zeroed. After it is zeroed, the screen resets itself.

Program Data Screen

Figure 6: *Program Data Screen*



When this screen is first viewed, just the STEP # parameter, GETSTEP button, and PROGs button display. When the user enters a value in the STEP # Parameter and then presses the GETSTEP button, the screen displays the data parameters and the action buttons to the left.

For all data parameters on the screen, a numeric keypad displays when the button in the parameter is pressed. If you are editing an existing program and the step number does not exist, you are forced to the last active step. The STEP # parameter accepts any value between 1 and 23.

DOT SIZE

The DOT SIZE parameter accepts any value between 1 and 10,000,000 motor counts.

PUMP SPEED

The PUMP SPEED parameter accepts any value between 1 and 4000 RPM.

ACCEL TIME

The ACCEL TIME parameter accepts any value between 0.001 and 999.9 seconds.

COUNT

The COUNT parameter accepts any value between 1 and 999.

INSERT

The INSERT button enters the data shown on the screen into the step that is set in the STEP # display. The data in each subsequent step shifts up by one. Data in the 23rd step, if present, is lost. The screen resets after insertion is complete.

DELETE

The DELETE button removes the data shown on the screen for the step that is set in the STEP # display from the program. The data in each subsequent step shifts down by one. Data in the 23rd step, if present, is zeroed. The screen resets after the deletion is complete.

SCAN

The SCAN button causes the next steps data to be shown on the screen. If the speed data field in the next step equals zero, the step jumps back to step one. If step 23 is being shown when the button is pressed, the step goes back to step 1.

OK

The OK button enters the data shown on the screen into the step that is set in the STEP # display.

CANCEL

The CANCEL button restores the screen parameters to the original values that existed before changes were made.

DOT / LINE

The DOT / LINE switch is a maintained button. When the switch is in:

> **DOT** position, the DOT SIZE parameter is visible.

> **LINE** position, the DOT SIZE parameter is invisible.

This switch defines whether the object to be dispensed in this step is a dot or a line. Dots use a predefined amount of material while Lines use a continuous stream of material.

PROG

The PROG button return the user to the PROGRAMS screen.

Run Screen

The display and operation of the RUN screen depends on the settings of the MANUAL / AUTO and SINGLE / PROGRAM selector switches in the SETUP screen:

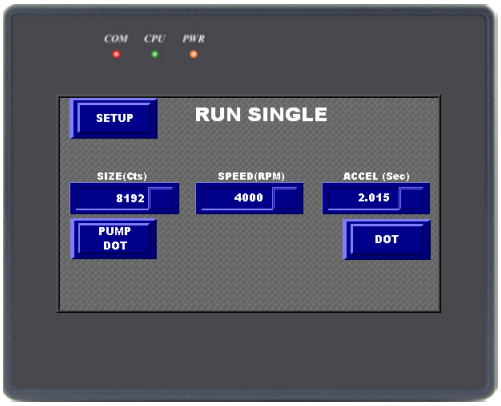
- When the MANUAL / AUTO switch is in the:
  - MANUAL position, the PUMP button is visible.
  - AUTO position, the PUMP button is invisible.
- When the SINGLE / PROGRAM switch is in the:
  - SINGLE position - refer to Run Screen - Single Mode (pg 11) for details.
  - PROGRAM position - refer to Run Screen - Program Mode (pg 12) for details.

When power is applied, the main screen display layout depends on the SINGLE/PROGRAM selector switch on the Setup screen. Refer to Main Screen Layout (pg 13) for details.

Run Screen - Single Mode

When the SINGLE / PROGRAM switch is in the SINGLE position, the display is as follows:

Figure 7: *Run Screen - Single mode*



  - The PROGRAM number parameter, the STEP # display, the RESET button, the DOT / LINE display, the PUMP SPEED display, the ACCEL TIME display, the COUNT display, and the COUNTER are all invisible.
  - The DOT / LINE switch is visible.
  - When the DOT / LINE switch is in the DOT position, then the SIZE parameter is visible and the SIZE display is invisible. Thus, the user can enter a desired dot size. When the DOT / LINE switch is in the LINE position, the SIZE parameter is invisible and the SIZE display is visible. The SIZE display will then

show the number of pump motor counts delivered for the line being pumped.

Run Screen - Program Mode

When the SINGLE / PROGRAM switch is in the PROGRAM position, the operator display is as follows:

Figure 8: *Run Program - Program mode*

– The PROGRAM number parameter, the STEP # display, the RESET PROG button, the DOT / LINE display, the SIZE display, the PUMP SPEED display, the ACCEL TIME display, the COUNT display, and the COUNTER display are all visible.
– The DOT / LINE switch and the SIZE parameter are invisible.

PUMP

The PUMP button in single will pump a dot of the requested size. When a line is requested, the PUMP button acts to start and finish the line, i.e., the pump operates only when the button is being held down.

RESET PROGRAM

The RESET PROGRAM button, when pressed, causes the STEP # to indicate Step # one and the count indicates the counts in step one. The counter is set to zero. The pointer is set to the beginning of a program.

PROGRAM

The program to be run can be changed via the PROGRAM number parameter. Whenever the program is changed, it forces the STEP # to 1 and the COUNT displays indicate the counts for the first step.

COUNTER

The COUNTER display shows where the controller is within the step count.

SKIPCOUNT

The SKIPCOUNT button is used to skip over a program count without pumping material. If you reach the end of the count for a given step, the SKIPCOUNT button will force a roll over to the next step and continue through to the end of the program.

SKIPSTEP

The SKIPSTEP button is used to skip over a program step without pumping material. When you reach the end of the program, the SKIPSTEP button continues to cycle through the program steps starting at the beginning. Stop on the desired step and continue with the pump request input

RUN PROGRAM

A pump status indicator is located in the center of the RUN PROGRAM screen. It will change states with the pump. For very small moves, it may not change states but the hardware output indicator will change and can be use to interface to an external control system.

DONE

A program status “Done” indicator displays below the pump status indicator. The status indicator flashes after the last count and the last step of a program.

Flash rates are determined by the Program Done Timer parameter (refer to Figure 2 on page 4). The program Done flash time lowers the maximum cycle time of the Mini III.

NOTE: For highest cycle time, set the PROG DONE FLASH parameter to 0.

Main Screen Layout

When power is applied, the main screen display layout depends on the SINGLE/PROGRAM selector switch on the Setup screen.

If the switch is in the PROGRAM mode, two additional items are visible.

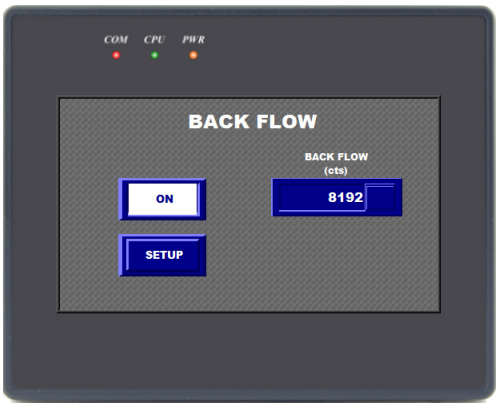
- First a program reset button, which allows for repositioning the program pointer to the start of the program.
- Secondly, a program status “Done” indicator is displayed. The status indicator flashes after the last count and the last step of a program. Flash rates are determined by the Program Done Flash Timer parameter in the Setup Screen (pg 4).

IMPORTANT: The program Done flash timer setting affects the overall speed of the automatic cycle.

Figure 9: *Main Screen Layout - Program mode*

Back Flow Screen

Figure 10: *Backflow Screen*



The Back Flow screen enables the user to force the pump to reverse the flow for a defined number of counts, after the pump move has been completed. The Back Flow draws back excess material away from the dispensing tip.

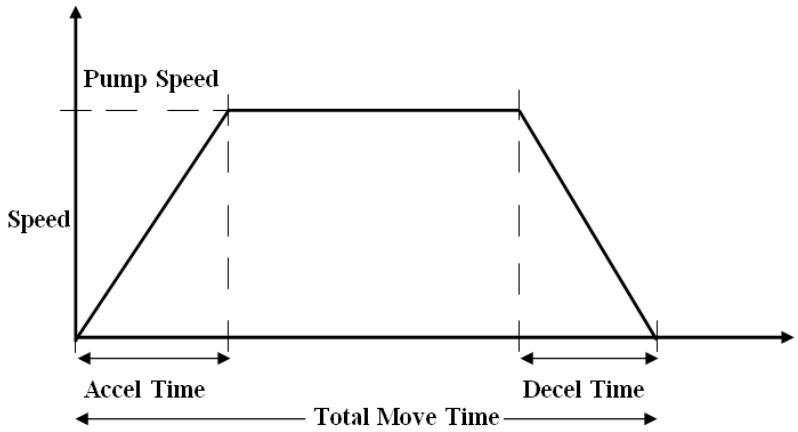
- Back Flow must be selected for the above described action to take place.
- The Back Flow count is then added to the next manual or programmed move (programmed move + reversed Back Flow).
- Back Flow, when selected, is added to both Dots and Lines in both automatic and manual modes.

Pump Profile, Timing, & Sequence

Pump Velocity Profile

Velocity profiles are generally trapezoidal:

Figure 11: *Pump Velocity - Trapezoidal Profile*



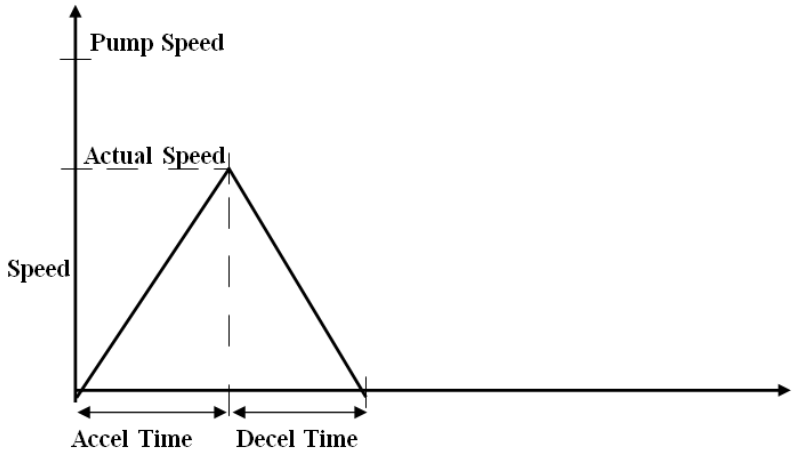
The following equation defines this profile:

Decel Time = Accel Time

Size / (Total Move Time - 2(Accel + Decel)) = Pump Speed (Revolution per Minute)

In some cases the profile will be triangular. For example, if the Accel Time is small, then the actual pump speed will not reach the value specified by pump speed parameter. In this case, the Accel Time and Size will take precedence over the pump speed and the result will be a triangular profile:

Figure 12: *Pump Velocity - Triangular Profile*



The equation for this profile will be:

Decel Time = Accel Time

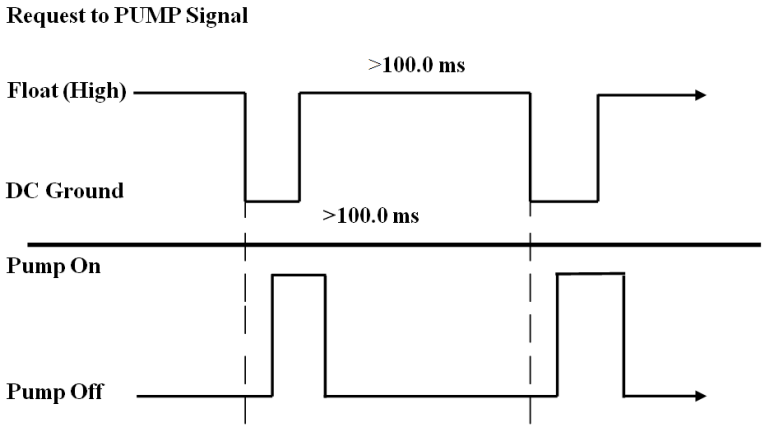
Size / Accel Time = Max Rev Reached (Revolutions per Minute)

Pump Timing Diagram

A timing diagram is shown below for a dot.

NOTE: The transition to start the operation as shown below is High-to-Low. Inverting the waveform will give a Low-to-High transition.

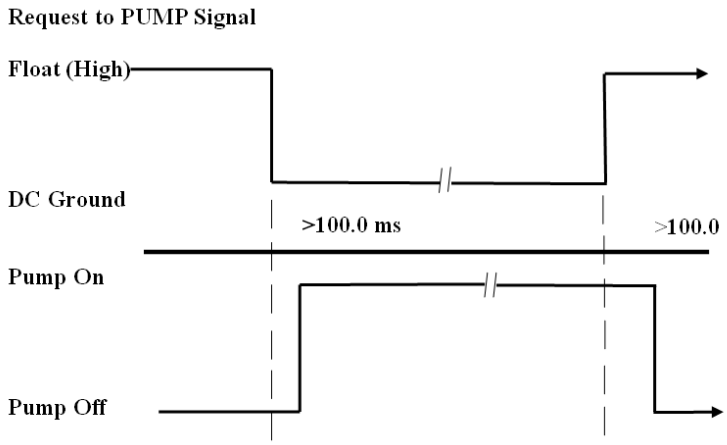
Figure 13: *Pump Timing Diagram for a Dot*



The timing diagram shown below is for a line.

NOTE: The transition to start pump operation as shown below is High-to-Low. Inverting the waveform will give a Low-to-High transition.

Figure 14: *Pump Timing Diagram for a Line*



A “Pump-running” signal is available on the Input Output (I/O) Interface connector. This signal is provided to indicate that the pump is in motion.

The output signal is on (Pin5) of the I/O Interface connector. It is driven by an open-collector (sinking) circuit. It is rated to 100 milliamps and is referenced to the system 5 VDC, which is supplied on wire (Pin 7). When the “Moving” signal is on, wire (Pin 5) is at the system DC ground potential. When the “Moving” signal is off, wire (Pin 5) is floating above ground.

The signal changes state at the start and end of the move. Therefore, the “on” point may be up to 100.0 milliseconds after the pump actually begins moving and the “off” point may be up to 100.0 milliseconds after the pump actually stops moving.

Pump Sequence Program

The system can store 10 programs in its memory. Each program can have up to 23 steps. Each step contains 5 pieces of data:

- Whether the system will pump a dot (predefined volume) or a line (volume based on an on/off signal).
- Dot size (available only if a dot, not a line, is requested).
- Pump speed.
- Time to accelerate up to the desired pump speed. This is also the deceleration time back to zero pump speed.
- The number of dots or lines in a given step.

A program used in this controller can be thought of as a 5 by 23 matrix of data points. An example of a program is given below:

Figure 15: *Program Example*

PROGRAM NO.					
STEP #	DOT / LINE	SIZE	PUMP SPEED	ACCEL TIME	COUNT
1	DOT	35	150	1	4
2	DOT	45	35	2	1
3	LINE	----	2	1	6
4	DOT	100	23	3	4
5	----	----	----	----	0
6	----	----	----	----	----
7	----	----	----	----	----
.	----	----	----	----	----
.	----	----	----	----	----
23	----	----	----	----	----

A program can be thought of as an endless, sequential list of items to be dispensed. The way in which this list is generated can be best explained by viewing the list below. This list was generated from the example program above (Figure 15).

NOTE: The list is generated by taking the data from step # 1 of the program to the step # that has a 0 found in the SPEED field. The list repeats itself from the last step # that contains a non-zero SPEED:

Figure 16: *Program List*

Request To Pump	Volume	Pump Speed	Accel/Decel Time	Prog. Step No.
1st	35	150	1	1
2nd	35	150	1	1
3rd	35	150	1	1
4th	35	150	1	1
5th	45	35	2	2
6th	----	2	1	3
7th	----	2	1	3
8th	----	2	1	3
9th	----	2	1	3
10th	----	2	1	3
11th	----	2	1	3
12th	100	23	3	4
13th	100	23	3	4
14th	100	23	3	4
15th	100	23	3	4
16th	35	150	1	1
17th	35	150	1	1
18th	35	150	1	1
19th	35	150	1	1
20th	45	35	2	2
21st	----	2	1	3
22nd	----	2	1	3
23rd	----	2	1	3
24th	----	2	1	3
25th	----	2	1	3
26th	----	2	1	3
27th	100	23	3	4
28th	100	23	3	4
29th	100	23	3	4
30th	100	23	3	4
.	.	.	.	.
etc. etc.	etc.	etc.	etc.	etc.

Interface Connector

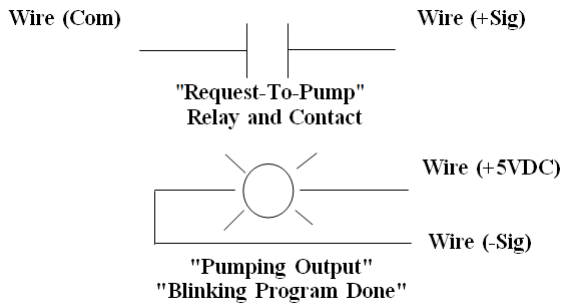
Interface Connector Description

The interface connector is a 9-pin D-Sub that contains the necessary input and output connections for the system.

A “Request-to-Pump” signal can be wired into the interface connector. It is available when the MANUAL / AUTO switch in the SETUP screen is set to the AUTO position.

For proper operation, this input signal must transition between the system DC ground potential and a floating potential. The system DC ground is supplied on wire (Pin1) of the interface connector and the input signal is supplied on wire (Pin 3) of the connector. A dry relay contact between the two pins can be used by the user's host machine:

Figure 17: *Input Signal Transition*



A special cable is included with the pump controller that facilitates the interface to an existing machine.

For the pump to be initiated, the system must detect a transition of the input signal between a floating (or “high”) state to the system DC ground. The detection can take as long as 20 milliseconds, after the transition has occurred. This also means that the signal should float (or be in a “high” state) for no less than 20 milliseconds and be at the DC ground potential for no less than 20 milliseconds.

NOTE: The transition must be seen when the pump is ***not dispensing***. If it is dispensing when the transition is made, no action is taken.

A second cable is included with the pump controller that has a twenty four (24) volt DC relay. This cable is required if the system that activates the pump is supplying 24 volt DC power. Five (5) volt cables and 12 volt cables are also available.

Interface Connector Layout

Interface Connector Pin Description

Pin No.	Description	Wire Color
1	Ground	Brown
2		
3	Signal	Yellow
4		
5	Pumping Feedback*	White
6		
7	+5 volts**	Green
8		
9		

*Not used by GPD Island integration. Pumping feedback wire is 5 VDC when pump is NOT turning and switches to 0 VDC when pump IS turning/moving.

**Not used by GPD Island integration. Provided for use with a dry relay.

Figure 18: *Interface Connector Pin Descriptions*

Pin Numbers	Description
1----------	System Common
2----------	
3----------	"Request to Pump"
4----------	
5----------	"Pumping Signal"
6----------	
7----------	+ 5 Volts
8----------	
9----------	"Program Done Signal"

Figure 19: *9 Pin D-sub Connector*

Control Enclosure

Figure 20: *Control Enclosure - Rear View*

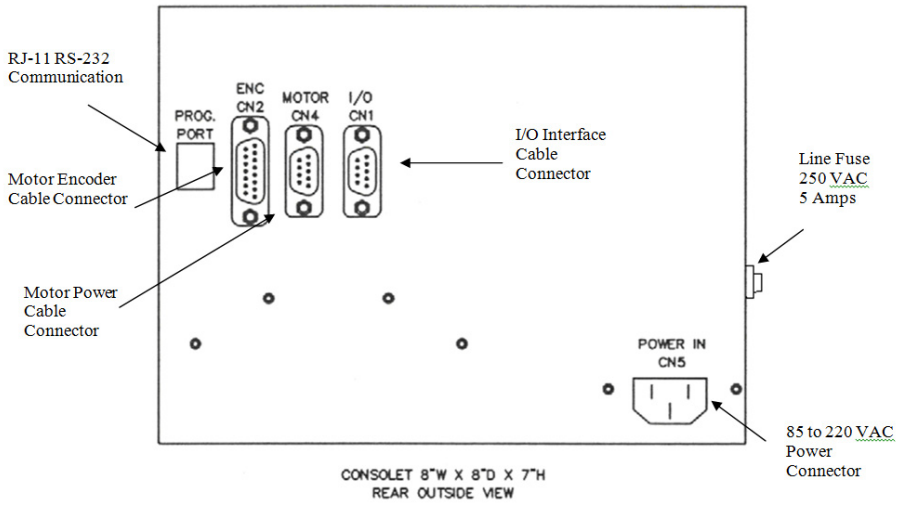
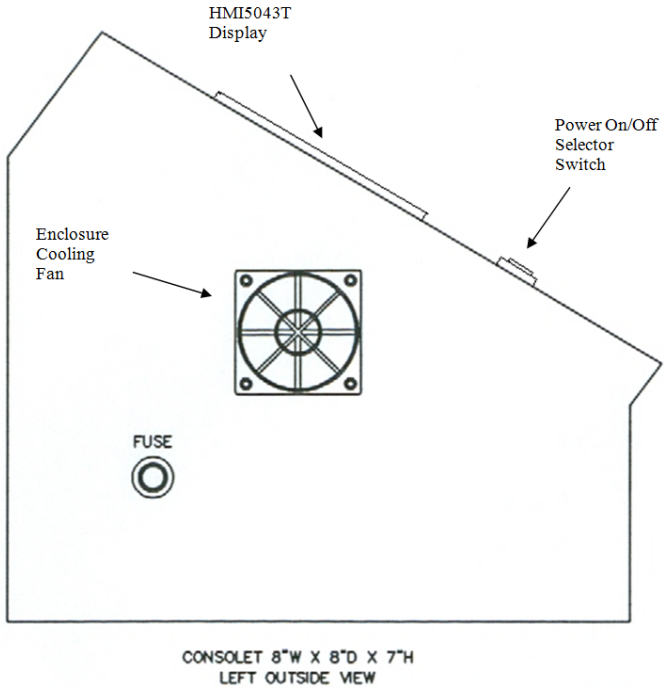


Figure 21: *Control Enclosure - Side View*



Motor Selection

The Mini III controller is designed to control one of three servo motors: 10 Watt, 20 Watt, or 30 Watt. Each motor has a completely different set of windings and associated parameters.

CAUTION: If the controller is not configured for a specific motor the motor windings could overheat and be destroyed.

Due to the potential damage of a motor, the motor selection parameters have been located on a hidden screen that is password protected.

To access the hidden screen:

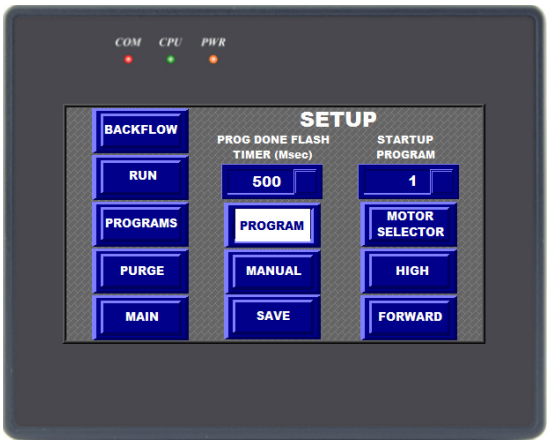
1. Go to the main screen, press the password button, and enter the correct password. Quickly press the CHANGE PASSWORD button. If you do not press the button within three seconds, you will be forced to try again.
2. When the CHANGE PASSWORD screen appears, press the lower right hand corner of the screen. The display will change from the normal control mode to the diagnostic mode. Small labels will display next to CHANGE PASSWORD and PROGRAM RESET.

Figure 22: *Motor Diagnostic Screen*

3. Now press the SETUP button. The SETUP screen will display.
4. A new button appears on the SETUP screen above the HIGH/LOW selector. Press the new button, MOTOR SELECTOR, to go to the

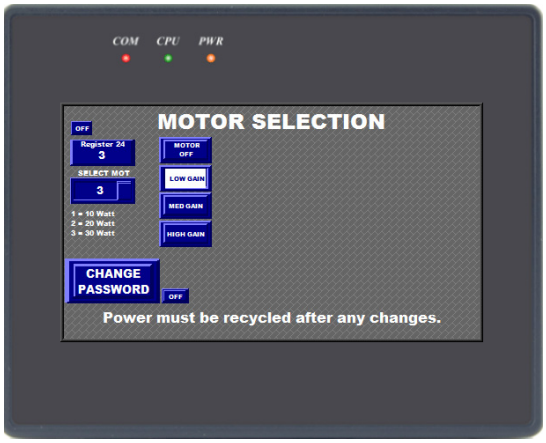
motor selection screen (Figure 24).

Figure 23: *Motor Diagnostic Screen*



The motor selector screen is made up several buttons and several motor parameters that are used to reconfigure the amplifier for one of the three motors options.

Figure 24: *Motor Selection Screen*



The parameters are only visible if the selector switch, in the top left column, is moved to the ON position.

To select a motor:

1. Press the motor OFF button to remove the power from the motor.
2. Press one of the gain buttons (Low, Med or High).

   NOTE: Only one of the gain select buttons is allowed on at one time.

3. Select the motor wattage (1 = 10 Watt, 2 = 20 Watt and 3 = 30 Watt).

   NOTE: The number does not stay.

4. Press the motor selector and enter the number for the wattage. If the parameter display button is on, you can watch the RAM and Flash values change. The change indicates that the new values have been stored into the amplifier memory.
5. The new motor power and encoder cables can now be connected. Remember that the first step in this procedure was to turn the motor power off. That step allows the cables to be connected without any damage to the motor.

   CAUTION: Make sure the settings are correct for the motor you selected.

6. After the motor is connected, the main power ***must be cycled*** to complete motor selection process.

Backlight Adjustment

The display back light can be adjusted to improve the visibility of the display in areas with difficult lighting situations.

1. Follow the Motor Selection (pg 23) instructions to get to the MOTOR SELECTION screen.
2. Press the bit selector switch to the right of the CHANGE PASSWORD button.
3. When the selector is on, a settings arrow will be displayed in the bottom right hand corner of the screen. Press the arrow and the configuration menu will appear in place of the arrow (Figure 26).

Figure 25: *Motor Selection Screen*

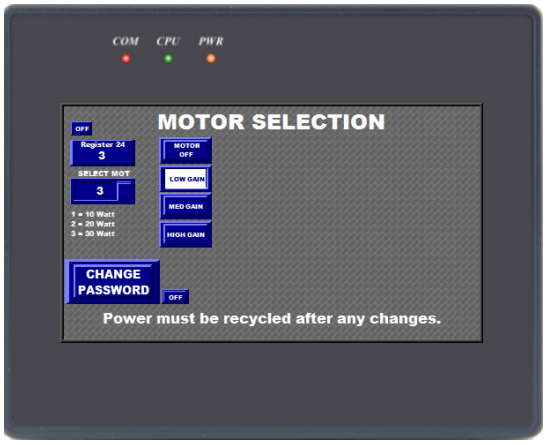


Figure 26: *Configuration Menu*

4. Select the white gear and a keyboard display will pop up.
5. Enter the password 111111. When the last digit is entered, the “System Settings” menu will appear.

Figure 27: *System Settings*

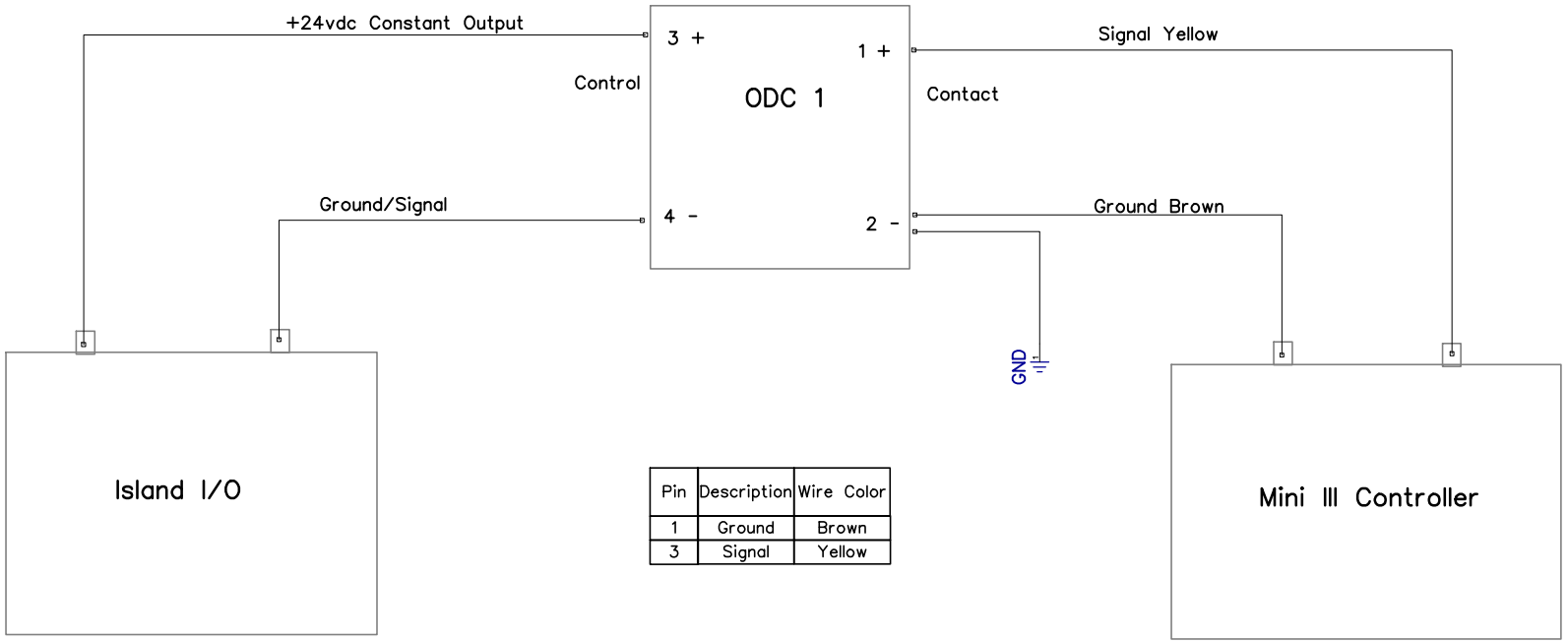
6. On the “System Settings” menu, locate the last drop down menu on the right hand side (Miscellaneous). Go to the far right side of the menu. Look closely at it, it may be difficult to see.

Figure 28: *System Settings - Miscellaneous tab*

7. The miscellaneous menu has a knob (Brightness) that will allow you to change the backlight level of the display. Use your finger or a touch screen stylus to rotate the knob.

8. When you are satisfied with the intensity, press the APPLY button and then press the OK button to close the menu. The systems settings menu will disappear.
9. Turn the BACK LIGHT selector switch off and return to the CHANGE PASSWORD screen.
10. From the CHANGE PASSWORD screen, navigate back to the MAIN SCREEN.

Mini III Integration with GPD Global Island 3S4 Series



Pin	Description	Wire Color
1	Ground	Brown
3	Signal	Yellow

GPD Global
Precision Dispensing Systems

Drawn by:	Date:	Name:	Part Number:	REV:	Approval:
EH	12-19-12	Mini III	20081-223-000-00	A	GM