SPEC PUMPS

PCC2 Injection Controller

Quick Start Guide

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CSA

C US

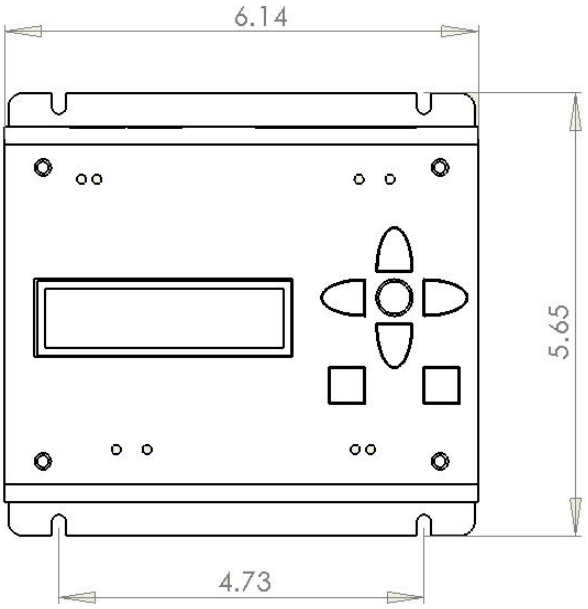
CLASS 1 DIV 2

or equivalent

Overview

The PCC2 controller is a programmable, cycled time chemical injection pump controller capable of simultaneously controlling either one or two chemical injection pumps, with each pump operating on its own specific injection profile. The PCC2 controller allows for local or remote control of the chemical injection pump or pumps. Remote control is accomplished by utilizing either RS-232 or RS-485 Modbus serial communication.

- The PCC2 controller can operate either one or two chemical injection pumps simultaneously. Each pump is controlled individually and operates on its own fully configurable profile.
- The PCC2 features three analog and two digital inputs to facilitate additional signal, monitoring, and control inputs.
- There are two serial port connections which allow the unit to operate in either RS-485 or as RS-232 serial communication mode.



Important Safety Information

Power, input and output (I/O) wiring must be in accordance with Class I, Division 2 wiring methods of CEC within Canada and in accordance with the local authority having jurisdiction.

Controller Features and Operation

The PCC2 controller utilizes a vacuum fluorescent visual display coupled with a key pad consisting of four arrow shaped navigation keys surrounding a round shaped “enter” key.

Navigation Keys and push buttons

- *Navigation keys*: Use the arrow shape navigation keys to move the in-screen cursor to the desired input selection or input parameter. Once a parameter is highlighted the up and down arrow keys are used to change parameters to the desired value.
- *Enter key* - Use the round enter key located in the middle of the four directional keys to select desired input parameter or value that the cursor is identifying (highlighted).
- *P1 and P2 pushbuttons* - Pump one and pump two can be turned on or off at any time by pressing the appropriate square key (labeled P1 or P2) located on the face of the controller directly below the navigation and enter keys.

Indicator lights

There are 8 indication lights on the face of the controller.

- **Output 1** - lights up when the output FET is in the closed position providing power to the output “P1” terminal (pump 1 is running).
- **Output 2** - lights up when the output FET is in the closed position providing power to the output “P2” terminal (pump 2 is running).
- **Power** - lights up indicating there is power applied to the controller
- **Fuse** – lights up when the unit’s internal power supply circuit protection fuse is opened (blown).
- **RX** – lights up when the unit is receiving data
- **TX** – lights up when the unit is transmitting data
- **D1** – lights up when the digital contact D1 changes state
- **D1** – lights up when the digital contact D2 changes state

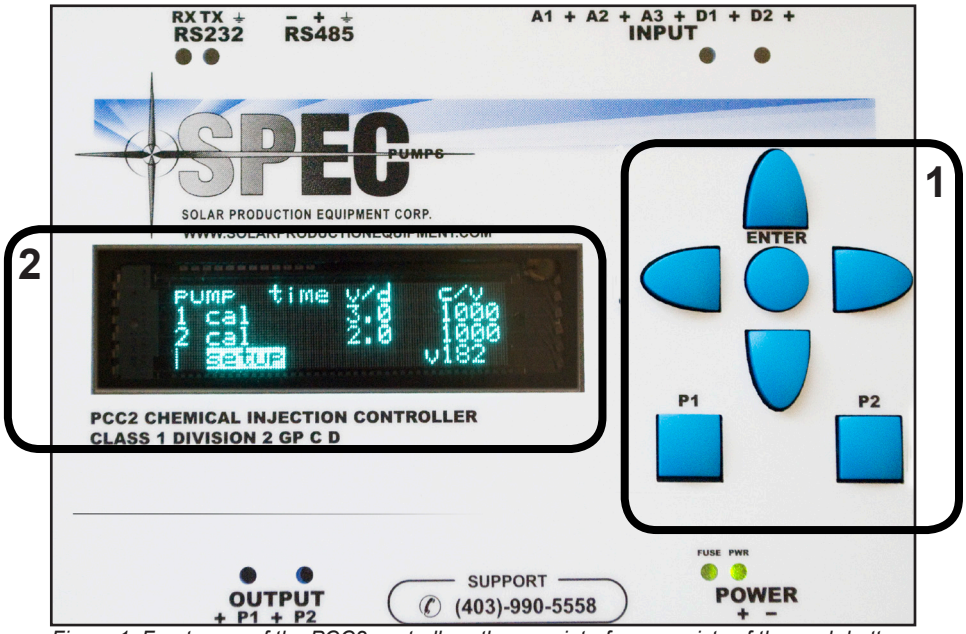


Figure 1: Front page of the PCC2 controller - the user interface consists of the push buttons and a display.

Controller Interface

The PPC2 interface is composed of:

1. seven push buttons
2. the display window

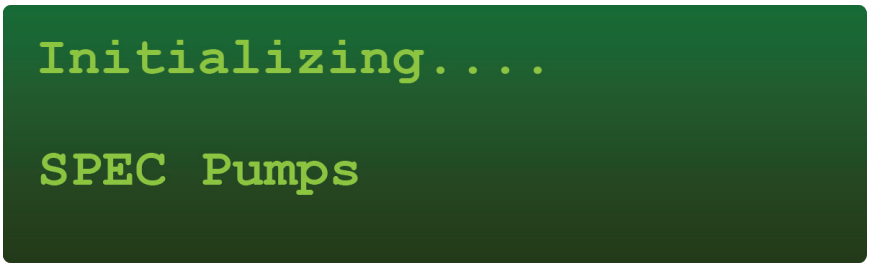
The interface is designed to guide the user through most procedures: instructions are often displayed on the screen.

The **up**, **down**, **right**, and **left** buttons are used to navigate through the menus

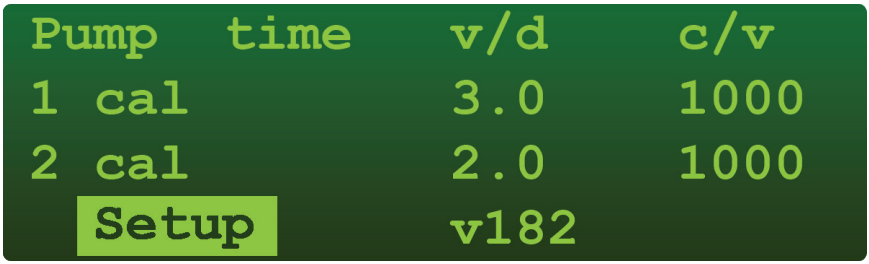
The **Enter** button is used to select menu options, for example to enter setup or to set a value

The **P1** and **P2** buttons are used to control (turn on or turn off) pump 1 and pump 2 respectively.

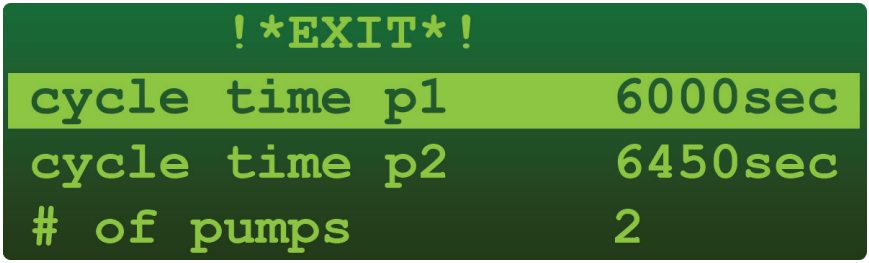
Note: The **ENTER** button is often referred to as the **OK** button in the display prompts



Initialization Screen: When the controller is first turned on it will need a few moments to initialize. During this time, this initialization screen will be displayed.



Primary Information Screen: After the controller finishes initialization, it will display the information screen, which summarizes important information about the controller.



Setup screen: The set up screen facilitates access to all control parameters that may be configured. In the set up screen, use the up and down arrow keys to navigate the cursor to highlight the menu item that you want to configure. Press **Enter** to select the highlighted menu item and then follow the on screen prompts.

Using the PCC2

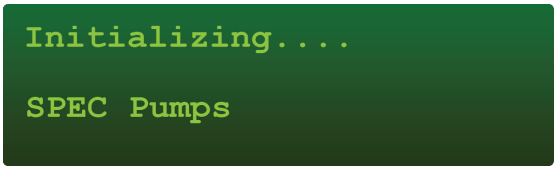
Note: Programming the PCC2 controller for 1 or 2 pump operation is identical. The programming sequence for a dual pump configuration is described in detail below. If you require control for only one pump, first configure the controller for single pump operation in the set up menu and then program as required.

Dual Pump Configuration

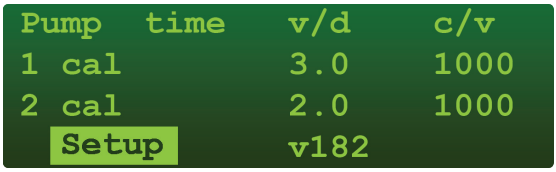
Initial Configuration

1. Power up the controller

2. The display will briefly flash the initialization screen:

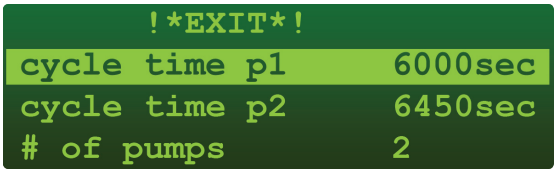


3. After the initialization screen, the display will default to the primary information screen:



4. If the controller is being started for the first time, move the cursor to highlight **SETUP** on the bottom of the screen and press **ENTER** in order to access the setup menu and set the parameters of the controller to correct values. If the controller is already set, skip ahead to the next section (Calibration).

5. Use the cursor keys to move up and down the list of menu items. Highlight the



first displayed menu item in sequence, and use the enter button to select the highlighted item. Once selected, follow the on screen instructions to set the value of the parameter. When the parameter is set to your liking press enter to commit to memory and exit.

6. Repeat step **#5** for each menu item until all settings have correct values.

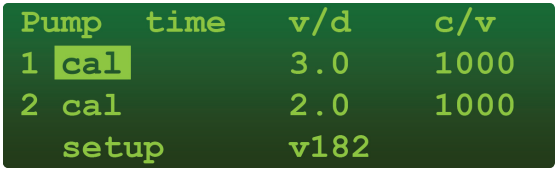
Calibration

You must first prime the pump or pumps prior to attempting to calibrate or running any pump. The inlet tubing must be configured so as to achieve a “flooded suction” state using gravity for head.

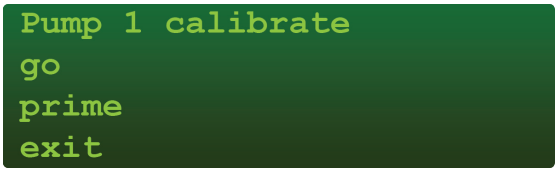
1. In order to calibrate either pump, the pump to be calibrated must be shut off.

   If the pump is running, shut the pump off by pressing the corresponding blue square push button (labeled **P1** or **P2**) on the face of the controller located just below the navigational and enter key cluster.

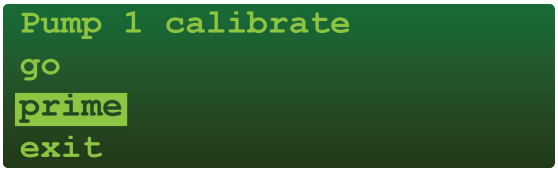
2. In the “primary information screen” choose the pump you wish to calibrate by using the navigational arrows to move the cursor to highlight **cal** for the pump you wish to calibrate. Press **ENTER** to enter the calibration mode.



3. In calibration mode the screen will now indicate the pump you have selected to calibrate and will display three options:

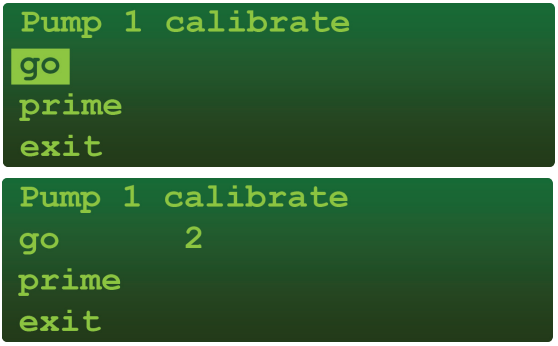


4. Prime the pump: move the cursor to **prime** and press the **Enter** key to start priming the pump. Press **Enter** again to stop when priming is done.

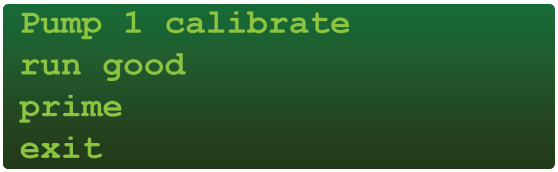


5. To properly calibrate the pump selected you must first isolate the sight glass from the chemical tank and observe the initial reading on the scale. **Note:** *Use the scale that references "segments per minute equal (gallons/ liters/ or quarts) per day". For the purpose of this example let's assume the initial sight glass observation registers 100 units).*

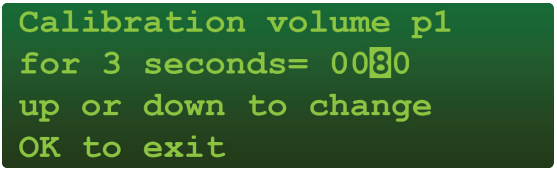
6. Record or remember the initial sight glass observation. In the calibration mode (shown above) move the cursor to "go" and press "enter". This will initiate the pump calibration run and the cal period timer will begin to count down (the default is 3 seconds). The pump should run during this time and the sight glass level will drop.



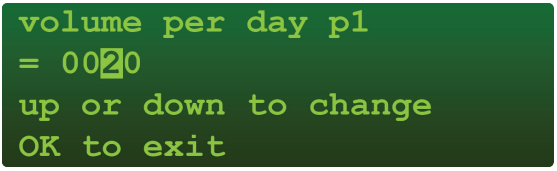
7. Once the calibration run is complete the screen will change to indicate the calibration run is complete (see figure on the right). Select:
   - **run good:** To go ahead with the calibration
   - **retry:** to run the pump again
   - **exit:** to cancel the calibration



8. If the calibration run went well, you will be prompted to enter the calibrated volume for the selected pump. This is the volume of fluid that was pumped from the “isolated” sight glass during the calibration pump run. For this example the fluid in the sight glass dropped from an initial value of 100 units down to 20 units during the 3 second run (100 - 20 = 80). The calibrated value then for this example is 80 units. Move the cursor to high light the appropriate parameter and use the up and down navigational keys to adjust the value as required (for this example we have used 80 units). Press the enter key to commit the value displayed to memory and exit.



9. Enter the volume per day required. This is the volume of fluid that is to be injected in a 24 hour period (for this example we use 20 units). Move the cursor to highlight the appropriate parameter and the use the up and down navigational keys to adjust each of the appropriate values. When you are satisfied with the value displayed press the enter key to commit the value displayed to memory and exit.



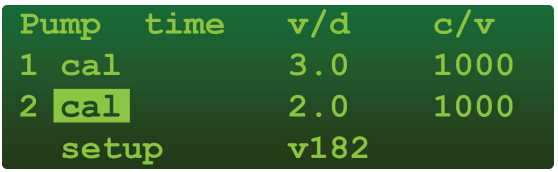
10. The pump is now calibrated.

You have now finished setting up, calibrating and entering the required pumping volume for pump 1. Open the isolating valve between the tank and sight glass to restore fluid flow from the tank to the pump.

To start the pump press the square key labeled “Pump 1”. Pressing the key again will stop the pump.

Calibrating Pump 2

The calibration sequence for calibrating Pump 2 is exactly the same as the sequence for calibrating Pump 1. In the primary information screen use the navigational keys to move the cursor to highlight cal to the right of pump 2 and press enter to re-enter the calibration sequence. Repeat the sequence steps.

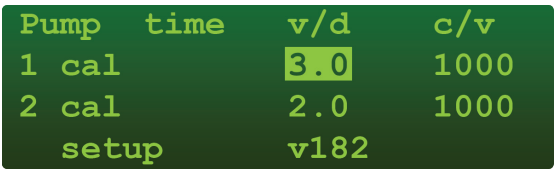


Changing the volume per day

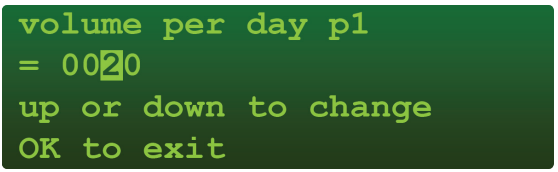
If you feel there is no need to run a calibration but wish to change the volume per day that you want the pump to inject this can be accomplished in the primary information screen.

Make sure you are in the primary information screen

Use the navigational keys to highlight the **v/d** for the appropriate pump. Press enter to select.



Use the navigational keys to move the cursor to the appropriate parameter and highlight.



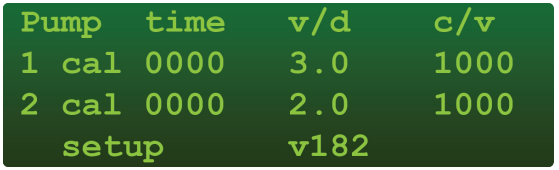
Once the appropriate values have been entered press enter to commit to the values to memory and exit.

Running

Once the pumps have been calibrated and the daily volume have been set for both pumps, the display will come back to the main information screen, and the time display will contain countdown values for the pumps (if the pumps are running).

- To start/stop Pump 1, press **P1**
- To start/stop Pump 2, press **P2**

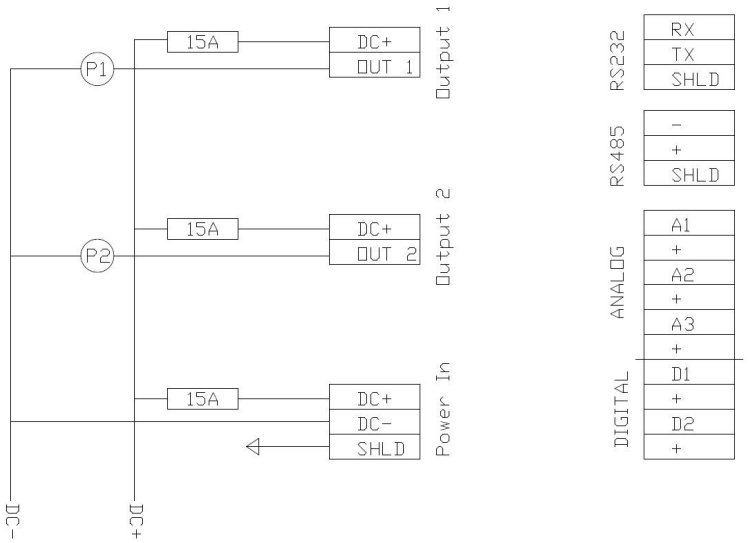
If there is a mistake in any entered value, highlight and press **cal** in the primary information screen to return to the calibration menu to make your corrections.



Power Save Feature

If the software does not detect any user activity for 5 minutes, the display will be turned off in order to save power. The controller is still running and the program is still counting down. To turn the display back on, press any button.

Connection Diagram



SPEC

Solar Production Equipment Corp

10-12180 - 44st. S.E.,
Calgary, Alberta
T2Z 4A2

Phone: **(403) 730-5951**
Fax: **(403) 236-8858**

24 hour emergency service: **(403) 990-5558**

Account inquiries (payables and receivables):
admin@solarproductionequipment.com

Sales or technical inquiries and field assistance:
gclark@solarproductionequipment.com

www.solarproductionequipment.com