



AMCOL CORPORATION

6000-VIC

VARIABLE INPUT CONTROLLER

TECHNICAL DESCRIPTION AND OPERATOR'S MANUAL



Variable Control of Injection Pulse Rate



Figure 1

A Quick Solution to Variable Pulse Rate Control

The 6000-ETC line of electronic controllers are designed exclusively for use with the 6000E Series of Precision Lubrication Systems. This combination replaces the outdated air pulse frequency generator, found in most MQL systems, with electronic control. 6000-ETC electronic controllers are available with a number of different standard timing and sequencing programs. Or ask about a custom program to fit your specific needs.

The 6000-ETC controller offers a versatile platform for optimizing lubrication cycles in fabrication machines. By aligning lubrication events with specific machine cycles, you can significantly improve equipment reliability and reduce tool and maintenance costs.

The 6000-VIC Variable Input Controller

The 6000-VIC program allows a variable electronic pulse input such as an encoder wheel to control a corresponding variable output. This allows the 6000E series Precision Lubrication system to increase and decrease output as machine speed varies. This combination is ideal for coating a metal strip as it moves through a production process such as roll forming, welded tube production, or stamping. Coating weight can be set by changing the distance between injection cycles. **This allows for a precise application of fluid on the tool or metal surface as production speeds change.**

Using this controller, Injection Pulse Rate will not be a static setting, but rather a variable electronic output that will automatically adjust based on the input.

A clear viewing screen shows the spray cycle settings. *Figure 3* shows the main screen that displays the system settings. Additional screens allow for modification of these settings.



Figure 2

There are two options available for variable machine input. An optional low-level indicator to monitor fluid level in the reservoir can be added to either package.

1. **6000-VIC-24-E** – Process speed signal is determined by a quadrature encoder.
2. **6000-VIC-24-A** – Process speed signal is determined by a 0-10V or 4-20mA analog signal.

Installing the 6000-VIC

To incorporate this technology, an AMCOL 6000E Precision Applicator is required. The two-solenoid control package is available on new AMCOL 6000 Series Spray equipment and can also be retrofitted to older model single air source systems.

The 6000-VIC Variable Input Controller includes:

- Preprogrammed PLC.
- 6' grounded power cord with plug.
- Open cable gland to insert and connect the control signal input.
- NEMA 12/13 sealed steel electrical enclosure.
- DIN caps prewired for quick connection to MAC 100 Series valves.

To Install:

1. Mount the controller in a position where it is easy to access, protected from damage, and 2' from the AMCOL 6000E Precision Applicator. To extend any cables, they should be properly connected to a junction box and extended using conduit.

2. For encoder systems, connect:

- +A to +A on the plugin module
- -A to -A on the plugin module
- +B to +B on the plugin module
- -B to -B on the plugin module

For analog voltage systems, connect:

- Signal to VI-0 on the plugin module
- Common to COM (3) on the plugin module

For analog current systems, connect:

- Signal to CI-1 on the plugin module
- Common to COM (6) on the plugin module

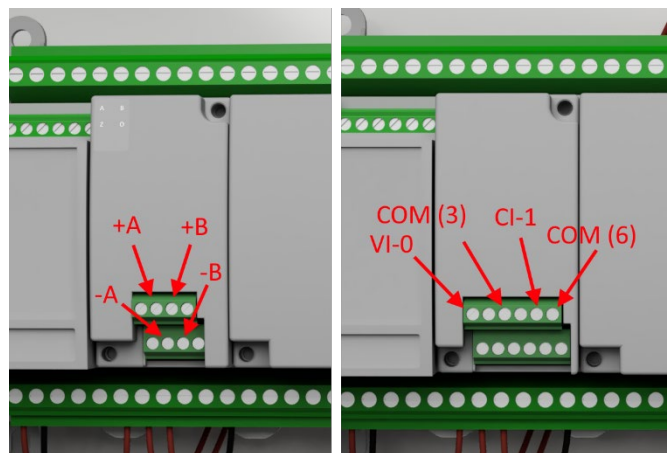


Figure 3

See Figure 4 and the wiring diagrams for details.

3. Connect the prewired solenoid caps with lights to the solenoid valves:
 - Cap labelled SV2 to the Injection Pulse Rate Solenoid Valve (labelled SV2)
 - Cap labelled SV1 to the Dispersing Air Solenoid Valve (labelled SV1).

Setting Up the 6000-VIC

1. Plug in the power cord.
2. Press F6 on the keypad and login to the system. The **default password is 6000**. The screen should momentarily flash green when logged in. The password can be changed by entering a different password while logged in and holding the OK button.
3. Press F2 on the keypad to access the input settings. For encoder systems, set the Pulses Per Revolution and Encoder Circumference settings. Use the up (^) and down (v) buttons to set the value, and the left (<) and right (>) buttons to scroll between values. Hold the OK button to switch which setting is being accessed. For analog systems, set the maximum speed setting.
4. Press F1 on the keypad to access the Injection Rate setting. This setting determines how often the system should spray (in feet per injection cycle). Use the up (^) and down (v) buttons to increase or decrease the value. Adjust this setting based on the desired coating weight of fluid.
5. Press ESC on the keypad to access the main screen and verify the settings are correct.

You are now ready to operate.

Operating the 6000-VIC

OPERATING MODES

1. **Automatic** – This is the standard mode that can be turned on by pressing the right arrow (>) button on the LCD. The system will dynamically adjust injection timing as the input speed fluctuates.
2. **Manual** – Manual mode can be turned on by pressing the left arrow (<) button on the LCD. In manual mode, the system will run at a fixed injection timing based on a speed of 120 ft/min. Manual mode should be used for setup, testing, and troubleshooting.

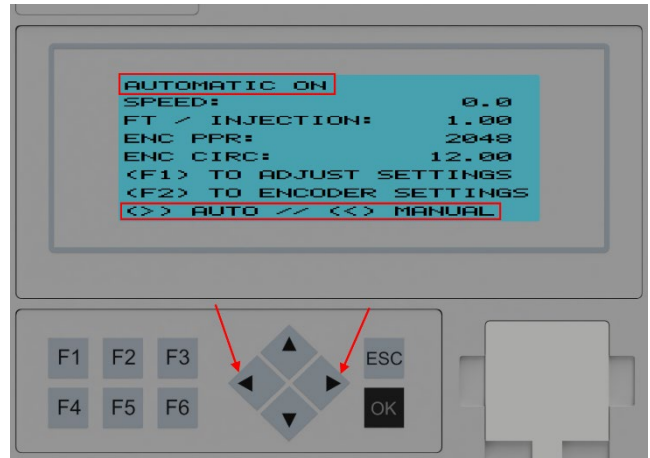
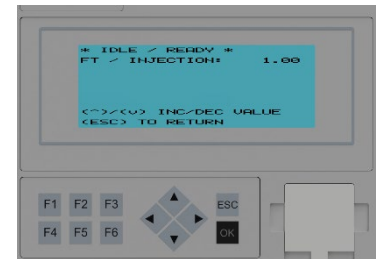


Figure 5

The current operating mode is displayed at the top of the main screen. Pressing the left or right arrows again will return the system to Idle/Ready.

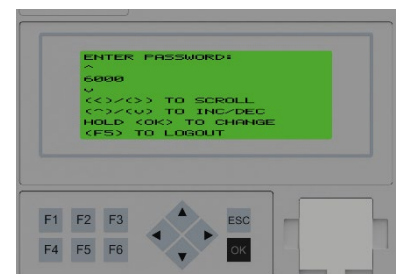
SCREENS AND SETTINGS

Injection Rate settings can be modified by pressing the F1 button and pressing the up (^) and down (v) arrows to increase or decrease the setting. This setting determines the distance the profile needs to travel before the pump cycles (in feet).



Encoder settings can be modified by pressing the F2 button. The Pulses per Revolution and Circumference settings are modified by scrolling to the value to be modified with the left (<) and right (>) buttons, then increasing and decreasing the value with the up (^) and down (v) buttons. Holding the OK button will toggle between setting the PPR and Circumference.

These screens will be unavailable unless the correct password is entered on the screen accessed by pressing the F6 button. When the correct password is entered and confirmed, the screen will flash green, the settings screens can be accessed, and the password can be changed. Access can be revoked by either pressing the F5 button or waiting 10 minutes for the system to automatically log out. **The default password is 6000.**



The main screen can be accessed at any time by pressing the ESC button.

Low-Level Indicator- Accessory



As an optional addition, 6000-VICs can be ordered with a low-level indicator light that interfaces with a ½ Gallon Reservoir on the 6000E Spray System. This indicator light will flash when the reservoir is low, ensuring the system never runs dry. This option requires that the reservoir is equipped with a low-level switch.

Retrofitting an Existing AMCOL 6000 Series System

There are two options to upgrade to electronic control:

1. **The simplest solution is to replace the complete control box.** The existing reservoir, liquid transport lines, and spray assemblies can all be reused.
2. **Retrofit the existing control box** from a one solenoid input to the dual solenoid version for electronic control. There is a retrofit kit available including a template used to modify the steel enclosure that houses the T60A Injectors and pneumatic controls and connections.

Please remember this controller is only applicable for use with an AMCOL 6000E Series Precision Spray Applicator with the two-solenoid control package.

