



## Configure a Pronto4 to use Analog Steering Feedback

### Introduction

Normally the Pronto4 steering ring uses a quadrature encoder for position feedback. This works well in situations where the steering wheel moves only when the wheels themselves move. But in some vehicles, where the steering is hydraulic, the steering wheel can move without turning the wheels or turning the axis of the vehicle. In this case, attaching a potentiometer to the steering wheels and bringing that signal into the Pronto4 will allow for precise steering control.

### Requirements

Pronto4 with an analog steering feature installed (indicated on the Service Module's configuration sticker).

### Procedure

1. Attach a vehicle-specific potentiometer (most often a 10K string potentiometer) to the vehicle where its value will change in proportion to the angle of the wheels or vehicle axis.
2. Connect the output of the potentiometer to P206 on the Pronto4. Refer to the following table for the pinout. The cable connector is a TE 206708-1 (available from Digi-Key, Mouser, and similar suppliers).

Pin	Function
2	Analog In
5	Ground
8	+5VDC

3. Power on and connect to the Pronto4 (e.g., VNC from an OCU; use a Utility Breakout Board to directly connect a keyboard, mouse, and monitor).
4. Close out all the programs and launch "C:\GC07\dj\_svp.exe".
5. Move the steering wheel such that the wheels or axis of the vehicle is straight.
6. On the first tab (i.e. "COM10" or "SVP Coms"), select "PACKET\_DISABLE" from the dropdown menu and then click the "Send Packet" button.
7. Uncheck the boxes "Packet Tx" and "Packet Rx".
8. Note the value of the 16th field of the steering stream (see Figure 1). The value will change slightly. Note the median value. This is the "potO" value (i.e., the offset value).

Value: \_\_\_\_\_



9. Turn the steering wheel to the left so that the wheels or vehicle axis are at their full left position. Verify the value in the 16th field changes as the wheels or vehicle axis move.
10. Turn the steering wheel to the right so that the wheels or vehicle axis are at their full right position. Verify the value in the 16th field changes as the wheels or vehicle axis move.
11. Click the "Pause READ\_VEHICLE" button. It should change to "READ\_VEHICLE paused". Data should stop streaming in the blue terminal.
12. In the blue terminal field, type the following:  
1 potN !  
16 potD !  
<value noted in step 7> potO !  
1 STEER\_SRC !
13. Click on the button labeled "READ\_VEHICLE paused". Data should start streaming and the button should change to "Pause READ\_VEHICLE".
14. On the ServoPod tab, move the steering control knob left and right. Verify that the steering moves as commanded.
15. If the steering motion does not move in the correct direction, go to the first tab (i.e. "COM10" or "SVP Coms") and type "-1 potN !" (without quotes) into the Packet Command Interface and then click the "Send Packet" button.
16. On the Servopod tab, type "90" into the commanded steering position box and press the "Enter" key. If the steering wheel does not move to 90 degrees, from the menu bar select Function->Diagnostics. On the Debug tab, change the "Steps per Degree" field to more or less than the current value and press the "Enter" key. The nominal Steps per Degree value is 16. The full range is 1-100. Initially adjust the field value in single integer values (e.g., 16 → 17, 17 → 18; 16 → 15, 15 → 14), and modify as appropriate.
17. Continue to evaluate different values in the Steps per Degree field until the steering wheel moves to the 90 degree angle. If that fails to yield accurate results, change the gain value (the 1 in 1 potN !) to larger values.
18. Once the steering is reacting properly, type "SAVE-RAM" into the field in the Packet Command Interface and then click the "Send Packet" button.

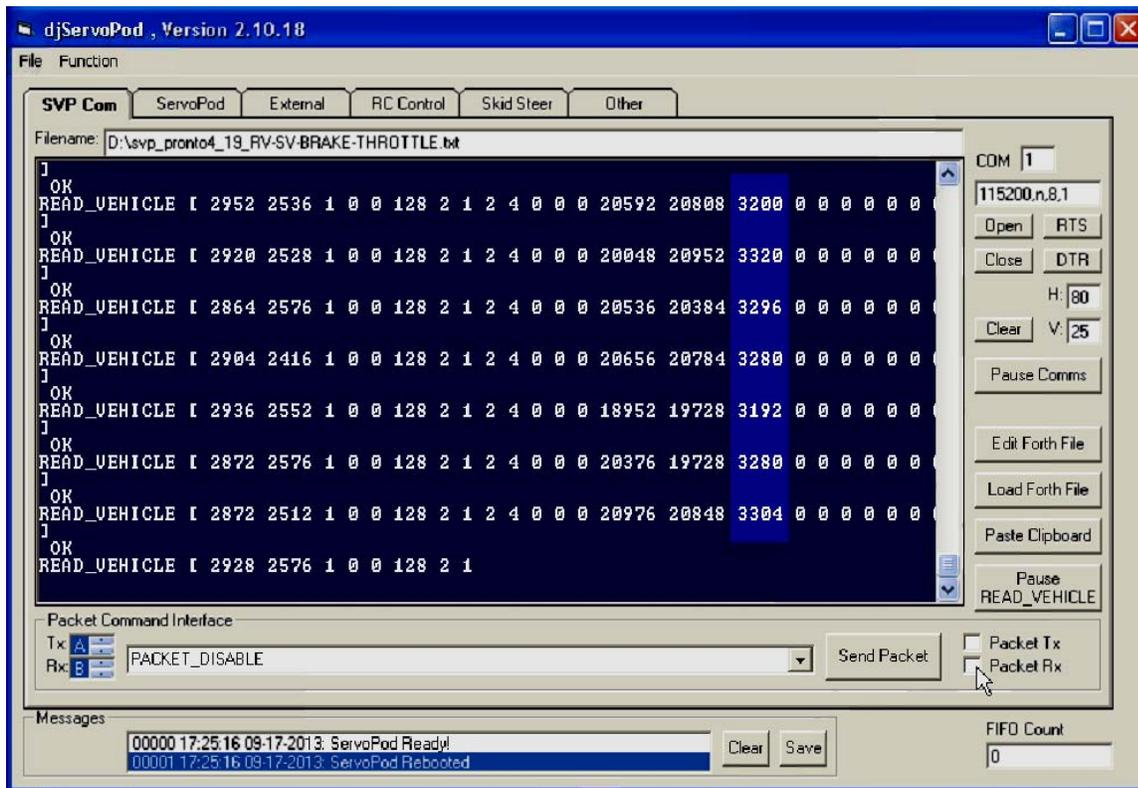


Figure 1: The 16<sup>th</sup> Field of the Serial Stream