AN102 – Valve Output: Difference Between PWM and Current Output Types

Introduction

Outputs of the Axiomatic Valve Controllers are high side switching output between GND and VPS. The difference between using PWM output type vs current output type is the closed-loop control.

Current Output Type

1. With current output type, the output is configured to drive a current within a certain range (i.e. 300mA to 1750mA).

2. When the command is to drive the output to 500mA, the Axiomatic valve controller's internal current feedback measurement is used within the controller's closed-loop current PID control to ensure 500mA of current is being sourced to the load. This closed-loop PID control drives the output to the commanded current regardless of VPS (12V, 24V, etc).

3. The current output type default switching frequency is 25kHz, and dither can be configured to be superimposed onto the signal.

PWM Output Type

1. With PWM output type, there is no closed-loop control. The controller will drive the output to a commanded %DC and will not use the current feedback.

2. Where a low impedance load is used, a %DC of 35% will draw more current if the VPS is 24V than if it is 12V, as the commanded PWM %DC is a percentage of VPS. This is because the output switches between GND and VPS.

Version	Date	Authors	Comments
1.00	June 28, 2019	Gustavo Del Valle / Sue Thomas	Initial Release
1.01	July 5, 2023	Kiril Mojsov	Legacy Updates & Marketing Review