

# 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.



# **AN102**

## Version 1.01

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