



PWM

CONTROLS INC.

PVD4E11

Proportional Valve Driver

Two PWM solenoid outputs, environmentally sealed

BENEFITS AND FEATURES

- Versatile digital design
- WiFi user interface for complete control and status information
- Compatible with most internet enabled devices and browsers
- Wide range of supply voltage
- Electronic limiting circuit / short circuit proof
- Load can be connected & disconnected live
- Protected against wrong connection
- Energy-efficient PWM circuit, no heat sink is required
- Current sensing maintains output regardless of changes in supply voltage and coil resistance
- Simple control with analog input, 5V/200mA supplied for joystick or other accessories
- Can be used either for one dual solenoid valve or for two independent single solenoid valves

SPECIFICATIONS

- Operating voltage: 9 - 36VDC
- Maximum output current: 4A
- Ramp time: 0.0 to 999s
- Linearity: 0.5%
- PWM / Dither frequency: 33-1000Hz
- Operating temperature: -40° to +80° Celsius
- Input signals: up to (+/-)10V and/or 20mA
- Contains FCC ID: 2AHMR-ESP12S
- Mating connector: Deutsch DT06-12SA or Amphenol AT06-12SA
- Ratings: connector IP67, epoxy UL 94HB
- Size: 4.0" x 2.1" x 1.9"
- Weight: 0.3lbs



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CONFIGURATION

The driver can be used:

- For two single solenoid valves, controlled by two independent analogue signals
- For one dual solenoid valve, controlled by one analogue signal or by the difference between two analogue signals

INPUTS

- Milliamp signal 0 to 21.9mA or any subrange thereof, applied to IN1(A or B) while IN2(A or B) accepts ON/OFF signal
- Voltage signal 0 to 10.9V or any subrange thereof, applied to (IN2 - IN3)(A or B) while IN1(A or B) accepts ON/OFF signal
- ON/OFF signal functions: Alternate Output Range, Enable Output or Disable Ramps
- See wiring diagrams on pg 4

OUTPUTS

- Two PWM outputs with frequency adjustable from 33 to 1000Hz
- Current or duty cycle proportional to the analogue input
- The return is connected to ground for most versatility
- The input range must be set to include the valid range of input signals (with a safety margin). The output is disabled when the signal applied is invalid.

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RAMPS

- Rate of rise or fall of output can be independently adjusted
- The setting is the amount of time it takes for output to ramp through the full range

USER INTERFACE

- WiFi, compatible with most internet enabled devices and browsers
- It allows the user to monitor the status and change the settings of the driver

INDICATOR LIGHTS

- WiFi: flashing - ready to connect / solid - connected
- Power: green
- Fault: red

FAULT CONDITIONS

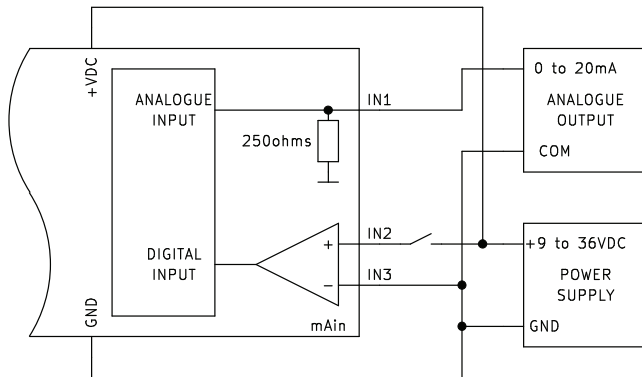
- Load is less than 0.1Ω (short) or more than 199Ω (open)
- Output exceeded 4A
- Milliamp input exceeded 22mA
- Fault status is reset as soon as fault condition is removed

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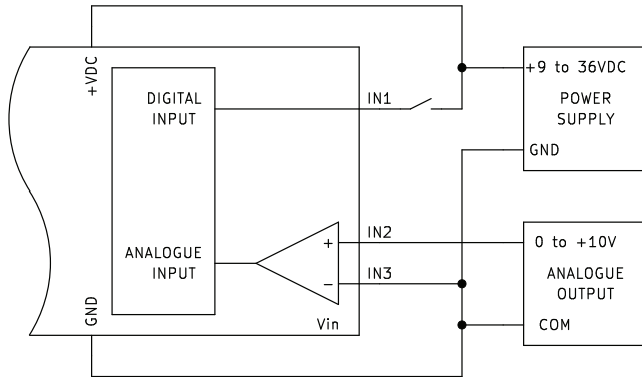
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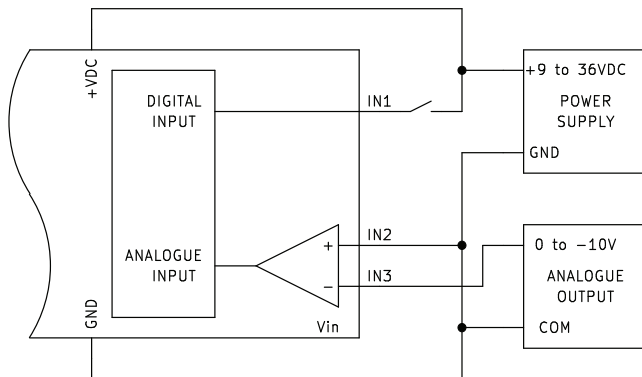
INPUT CONFIGURATIONS



milliamp
input



positive
Volts input



negative
Volts input

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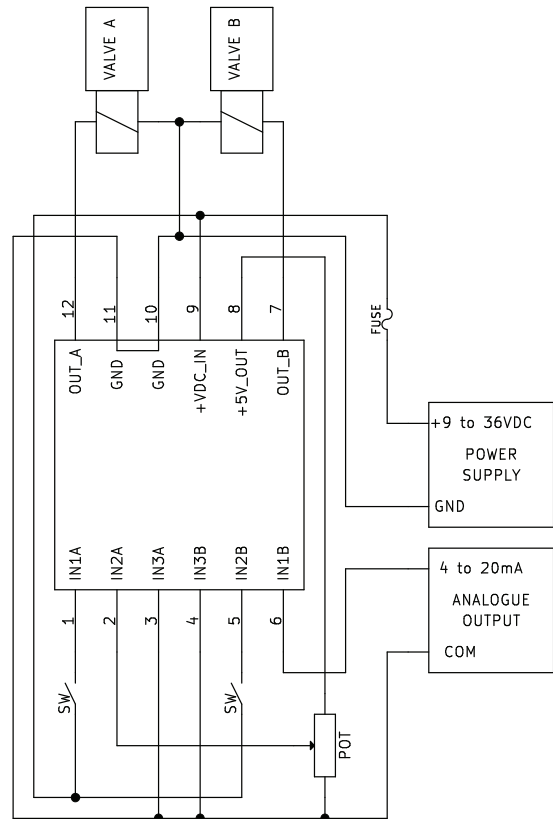
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Configuration and wiring diagram for two independent single solenoid valves:

Potentiometer and output enable switch for valve A
4-20mA signal and ramp disable switch for valve B

Solenoid A			
Input selection	IN A		
IN2A range	0.2 to 5.2	V	
Output range	0.20 to 0.80	A	
Ramp up	4.0	s	
Ramp down	2.0	s	
PWM frequency	180	Hz	
IN1A function	Enable output		
Solenoid B			
Input selection	IN B		
IN1B range	3.6 to 20.4	mA	
Output range	0.50 to 3.50	A	
Ramp up	20.0	s	
Ramp down	10.0	s	
PWM frequency	140	Hz	
IN2B function	Disable ramps		
WiFi operates for	30 minutes		



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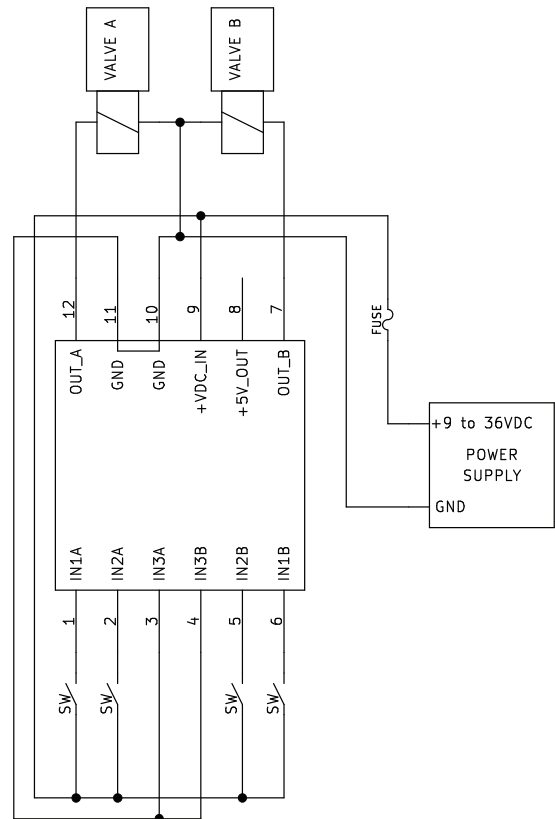
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Configuration and wiring diagram for two independent single solenoid valves:
Two switches to select one of four presets for each valve

Solenoid A		
Input selection	IN A	
IN2A range	0.0 to 10.9	V
Output range	0.20 to 0.40	A
Alternate output range	0.60 to 0.80	A
Ramp up	0.1	s
Ramp down	0.1	s
PWM frequency	180	Hz
IN1A function	Alternate output	
Solenoid B		
Input selection	IN B	
IN2B range	0.0 to 10.9	V
Output range	0.50 to 1.50	A
Alternate output range	2.50 to 3.50	A
Ramp up	30.0	s
Ramp down	15.0	s
PWM frequency	140	Hz
IN1B function	Alternate output	
WiFi operates for	30 minutes	

IN1A	IN2A	OUT_A	IN1B	IN2B	OUT_B
OFF	OFF	0.20	OFF	OFF	0.50
OFF	ON	0.40	OFF	ON	1.50
ON	OFF	0.60	ON	OFF	2.50
ON	ON	0.80	ON	ON	3.50



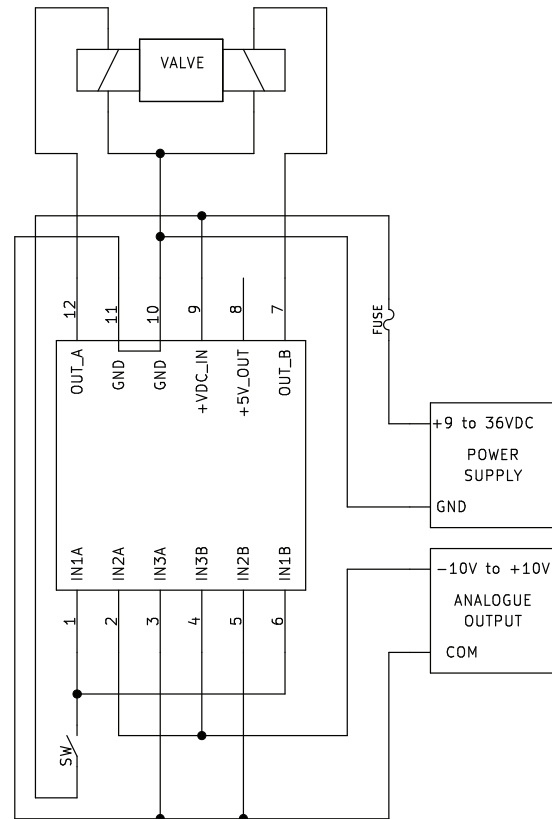
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Configuration and wiring diagram for dual solenoid valve: -10V to +10V signal and low/high range switch

Solenoid A			
Input selection	IN A - IN B		
IN2A range	0.2 to 10.2	V	
Output range	0.20 to 0.80	A	
Alternate output range	0.40 to 1.60	A	
Ramp up	1.0	s	
Ramp down	1.0	s	
PWM frequency	150	Hz	
IN1A function	Alternate output		
Solenoid B			
Input selection	IN B - IN A		
IN2B range	0.2 to 10.2	V	
Output range	0.20 to 0.80	A	
Alternate output range	0.40 to 1.60	A	
Ramp up	1.0	s	
Ramp down	1.0	s	
PWM frequency	150	Hz	
IN1B function	Alternate output		
WiFi operates for	30 minutes		



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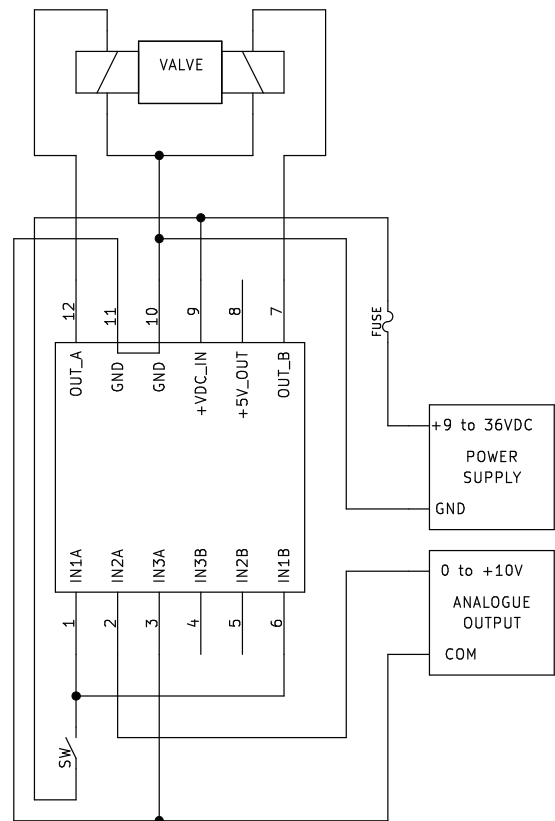
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Configuration and wiring diagram for dual solenoid valve:

0-10V signal and enable switch

Duty cycle output

Solenoid A	
Input selection	IN A
IN2A range	0.0 to 4.8 V
Output range	75.0 to 15.0 %
Ramp up	1.0 s
Ramp down	1.0 s
PWM frequency	33 Hz
IN1A function	Enable output
Solenoid B	
Input selection	IN A
IN2A range	5.2 to 10.2 V
Output range	15.0 to 75.0 %
Ramp up	1.0 s
Ramp down	1.0 s
PWM frequency	33 Hz
IN1A function	Enable output
WiFi operates for	30 minutes



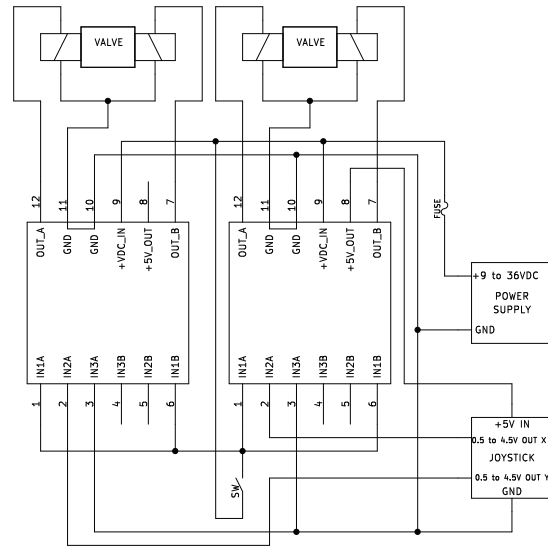
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Configuration and wiring diagram for two dual solenoid valves: Two-axis hall effect joystick and low/high range switch

Solenoid A			
Input selection	IN A		
IN2A range	0.4	to	2.4 V
Output range	0.80	to	0.20 A
Alternate output range	1.60	to	0.40 A
Ramp up	0.5		s
Ramp down	0.5		s
PWM frequency	200		Hz
IN1A function	Alternate output		
Solenoid B			
Input selection	IN A		
IN2A range	2.6	to	4.6 V
Output range	0.20	to	0.80 A
Alternate output range	0.40	to	1.60 A
Ramp up	0.5		s
Ramp down	0.5		s
PWM frequency	200		Hz
IN1A function	Alternate output		
WiFi operates for	8 hours		



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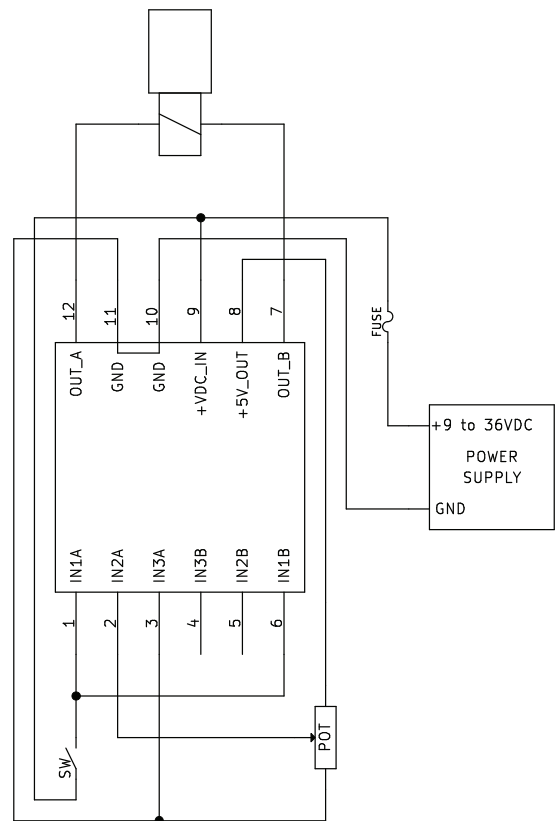
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Configuration and wiring diagram for bipolar voice coil / servovalve: Potentiometer and ramp disable switch

Solenoid A			
Input selection	IN A		
IN2A range	0.0	to	2.4 V
Output range	3.00	to	0.10 A
Ramp up	0.0		s
Ramp down	0.0		s
PWM frequency	999		Hz
IN1A function	Disable ramps		
Solenoid B			
Input selection	IN A		
IN2A range	2.6	to	5.1 V
Output range	0.10	to	3.00 A
Ramp up	0.0		s
Ramp down	0.0		s
PWM frequency	999		Hz
IN1A function	Disable ramps		
WiFi operates for	1 week		



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Configuration and wiring diagram for basic closed loop with single solenoid valve

Potentiometer target signal and 2-wire transmitter feedback

One enable switch

Solenoid A			
Input selection	IN A - IN B		
IN2A range	0.0	to	5.1 V
Output range	0.10	to	3.90 A
Ramp up		10.0	s
Ramp down		10.0	s
PWM frequency		160	Hz
IN1A function	Enable output		
Solenoid B			
Input selection	IN B - IN A		
IN1B range	3.6	to	20.4 mA
Output range	0.00	to	0.00 A
Ramp up		0.0	s
Ramp down		0.0	s
PWM frequency		160	Hz
IN2B function	Unused		
WiFi operates for	Always		

