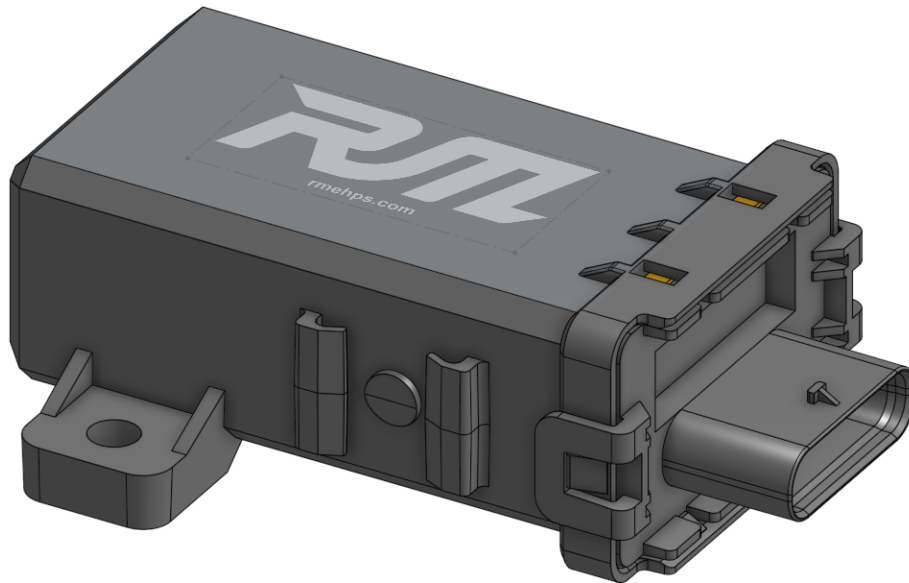


Reform Motorsports Electro-Hydraulic Power Steering Pump Controller (V1.5 Beta Volvo Only)

USER MANUAL



Warning

! All products sold by Reform Motorsports are designed for off-road use only. Motorsports are inherently dangerous and these products should not be used in a life critical situation. You accept all risks and responsibilities when using the products.

! Reform Motorsports is not responsible for any damages caused by incorrect installation or use of the product.

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Reform Motorsports EHPS Controller

The Reform Motorsports EHPS Controller is designed to run many OEM EHPS (Electro-Hydraulic Power Steering) system hydraulic pumps. The controller communicates with the pump via the CAN bus protocol and controls pump speed by generating and sending messages that emulate the messages sent by sensors and control modules in the factory vehicle.

Version Information (V1.5 Beta)

This manual covers the **V1.5 Beta (Volvo only)** version of the controller. Instructions will vary depending on product version, and attention should be given to notes indicating changes.

Changelog

V0.1-1.2 - Closed Alpha Testing prototype

V1.4 - Open Beta Testing

V1.5 - Update to input power circuit and filter capacitors to increase input voltage protection.

Features

- Waterproof enclosure
- 2 Control Modes
 - Preset pump speed based off of DIP switch position
 - 0-3.3v input proportionally mapped to pump speed output
- ~~CAN BUS watch/relay messages from other CAN bus modules*~~
- CAN bus ESD protection
- Reverse polarity protection, and input power filtering/protection up to 48v
- Removable CAN bus termination resistor jumper
- ~~Wi-Fi configuration through mobile app*~~
- ~~12V PWM input*~~

*Not implemented in this version

Connector Pin Information

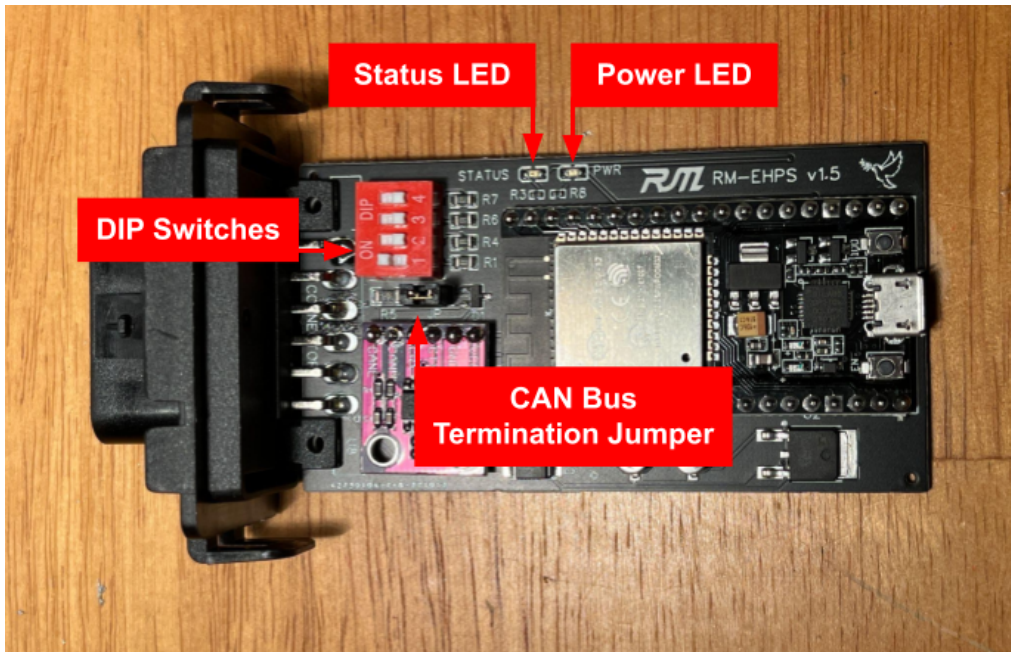


Pin	Name	Function
1	Ground	Chassis Ground
2	Speed_In	Speed control input (0-3.3v)
3	3.3v Ref	3.3v Reference voltage
4	CAN L	CAN bus LOW to EHPS Pump CAN LOW
5	CAN H	CAN bus HIGH to EHPS Pump CAN HIGH
6	+12v	12v Switched/Ignition Power

Notes:

- +12v (12v Switched Power) on the controller should be powered on before, or at roughly the same time as the switched power signal to the EHPS pump.

Board Layout



DIP Switch Settings and Indicator Lights

Speed control mode		
DIP 1	OFF	ON
Mode	Rotary Switch	DIP Switches

DIP switch speed presets (approx.)			
	DIP 2	DIP 3	DIP 4
100%	OFF	OFF	OFF
90%	ON	OFF	OFF
80%	ON	ON	OFF
70%	ON	ON	ON
60%	OFF	ON	ON
50%	OFF	OFF	ON
40%	ON	OFF	ON

LED Indicators	
STATUS	Status
Flashing	Receiving CAN messages from pump
Solid ON	Receiving stopped
OFF	No messages received

PWR	Status
Solid ON	Powered On
OFF	No Power

Installation Instructions

Kit contents

Todo

Mounting

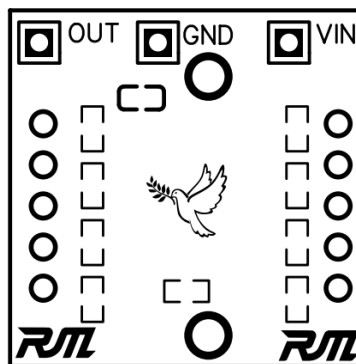
Todo

Wiring

Rotary Switch

1. If you are using the Reform Motorsports 8 Position Rotary Switch, use the table below to wire from the switch pins, to the controller pins.

Rotary Switch Pin	Name	Corresponding pin on controller
OUT	Output signal	Speed_In (2)
GND	Signal ground	Ground (1)
VIN	Input voltage	3.3v Ref (3)



(Bottom view of 8 Position Rotary Switch)

Configuration

DIP Switches

1. DIP switch 1
 - a. OFF - Use 0-3.3v input on Speed_In (2) pin to set speed proportionally from ~ 50% to 100% pump speed
 - b. ON - Use DIP switch 2-4 for preset speeds, ignore Speed_In input. Refer to table in *DIP Switch Settings and Indicator Lights* section for presets and DIP switch settings
2. DIP switch 2, 3, 4
 - a. Only used if DIP switch 1 is ON. Refer to table in DIP Switch Settings and Indicator Lights section for presets and DIP switch settings

CAN bus termination Jumper

1. If the CAN bus termination jumper is installed, it will enable a 120Ω resistor across CAN HIGH and CAN LOW.
 - a. Your EHPS pump will determine if you need to have this jumper installed. After powering on the controller and pump, if the red STATUS LED does not start flashing, try removing the jumper and power cycling both the controller and the pump.
 - b. You can also determine if the jumper is required by measuring resistance between CAN HIGH and CAN LOW after the pump is wired into the controller. The resistance between the two pins should be around 60Ω. If the reading is closer to 120Ω, try installing the jumper.

Troubleshooting

Todo