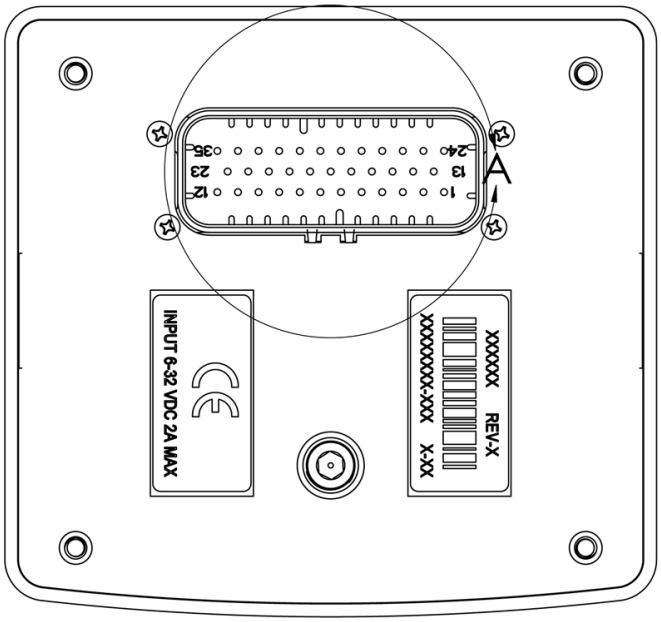
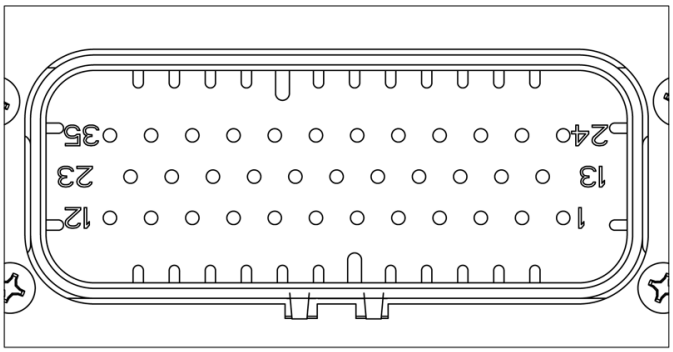
PV485 I/O
Application Notes

Revision B November 3,2022

Connector Pinout





DETAIL A
SCALE 2 : 1

Pin #	Pin Assignments
1	USB D-
2	USB ID
3	Digital Output 1 (Low side, 500 mA)
4	Digital Output 3 (Low side, 500 mA)
5	Frequency Input (Alternator and Mag)
6	Digital Input 1
7	Digital Input 3
8	A/D Input 2 (0-5v, 4-20 mA, Resistive)
9	A/D Input 4 (0-5v, 4-20 mA, Resistive)
10	Analog Output (0-5 V)
11	N/C
12	N/C
13	USB Shield
14	CAN -
15	Digital Output 2 (Low side, 500 mA)
16	Digital Output 4 (Low side, 500 mA)
17	Freq Input Return
18	Digital Input 2
19	A/D Input 1 (0-5v, 4-20 mA, Resistive)
20	A/D Input 3 (0-5v, 4-20 mA, Resistive)
21	A/D Gnd
22	Analog Output Gnd
23	N/C
24	USB D+
25	USB Vbus
26	CAN +
27	Ignition
28	Batt+
29	Batt-
30	Batt2+
31	N/C
32	N/C
33	N/C
34	RS485 -
35	RS485 +

PIN SPECIFICATIONS FOR AMPSEAL STYLE CONNECTION

Digital Inputs

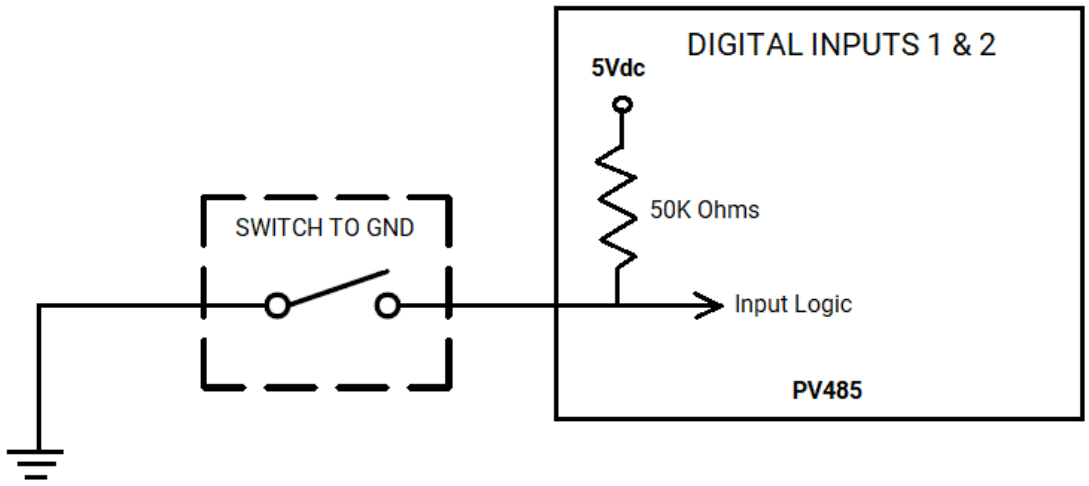
DI-1 and DI-2:

Active Low Inputs (Switch input state will be Open or ground)
Internally pulled high to 5Vdc through a 50Kohm resistor
Switch wetting Current: 100uAmps

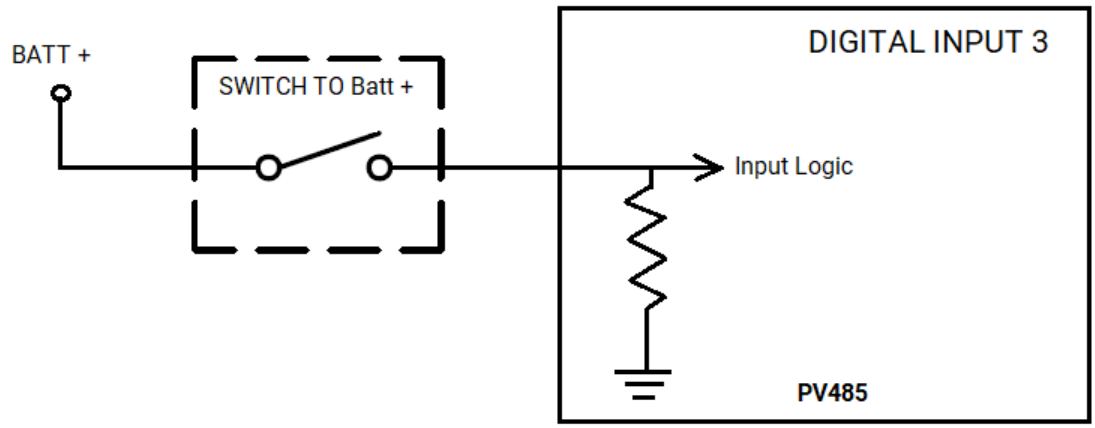
DI-3:

Active High Input (Switch input state will be Open or Battery+)
Internally pulled low to ground through a 50Kohm resistor
Switch Wetting Current: 2mA@24Vdc, 1mA@12Vdc

Typical Active Low Digital Input Wiring



Typical Active High Digital Input Wiring



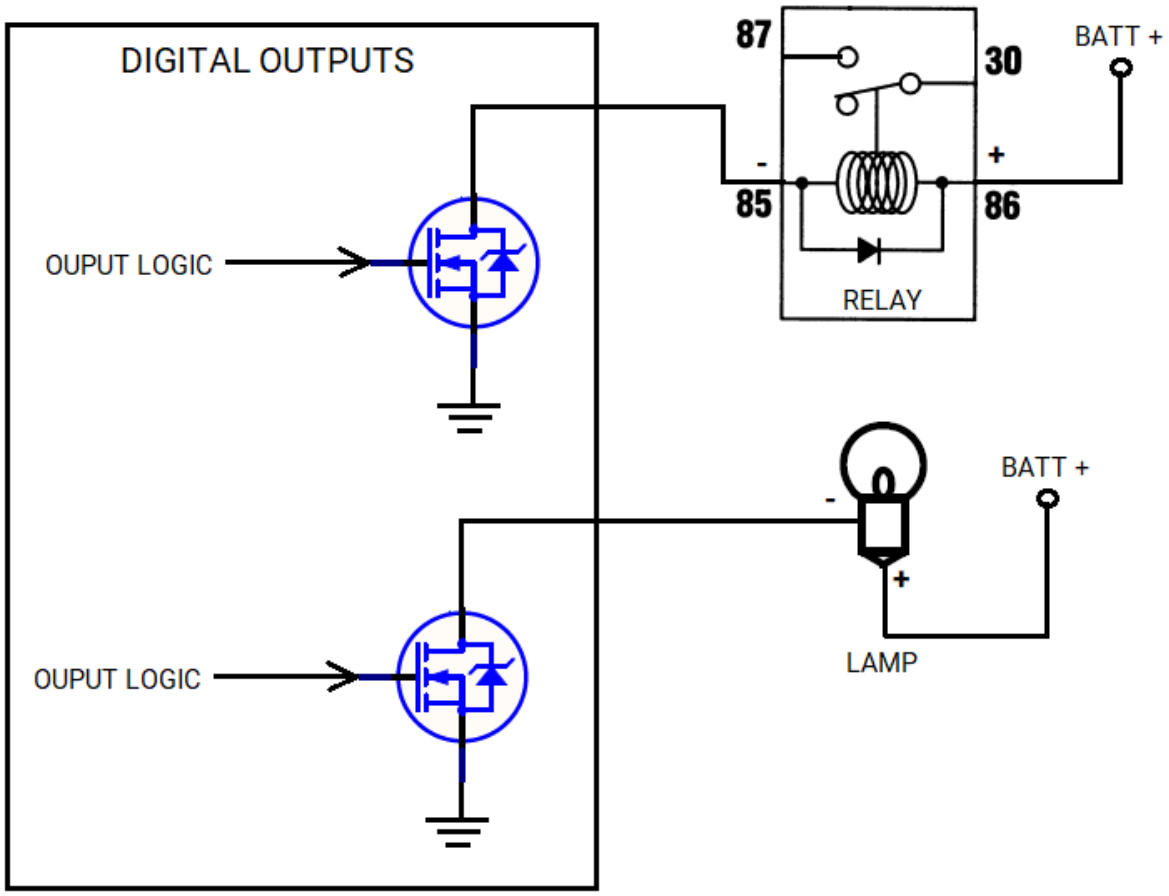
Digital Outputs

DO-1 to DO-4:

Low Side Open Drain FET (Output State will be Open or switched to Ground)
Maximum Current Sink: 500mA (See product specification)
Maximum Switching Voltage: 32Vdc

WARNING: When an inductive load such as a relay coil is de-energized a large voltage spike is generated reaching hundreds of volts that can damage the digital output FET.
When driving inductive loads, it is recommended to place a flyback diode across the load in a reverse bias manner to shunt the reverse voltage spike (back-EMF) that is generated when the digital output goes from a on state to off.

Typical Digital Output Wiring



Analog Inputs

Software Selectable Options:

NOTE: Maximum analog input voltage is 5Vdc for any mode selected.

- 0-5Vdc Mode: Expects a 0-5Vdc signal from active sensors or potentiometer voltage, or similar.
- 4 – 20mA Mode: Expects a Standard 4-20mA current loop input, internally shunted to ground through a 200 ohm resistor.
- Resistive Mode: Expects a resistive sender input. Internally pulled high to 5Vdc through a 400ohm resistor
- Digital Input 0-5Vdc Mode: Expects a switch input to open circuit or 5Vdc
- Digital Input 400ohm Pullup Mode: Expects a switch input to open circuit or ground, Internally pulled high to 5Vdc through a 400ohm resistor

Transfer Functions:

Note: The A/D converter has a range of 0-5Vdc with 10 bits of resolution so the A/D count range will be 0 – 1023.

1) 0 – 5Vdc Mode: Powervision Returns A/D Counts, 0Vdc = 0 A/D counts, 5Vdc = 1023 A/D counts, scale is linear.

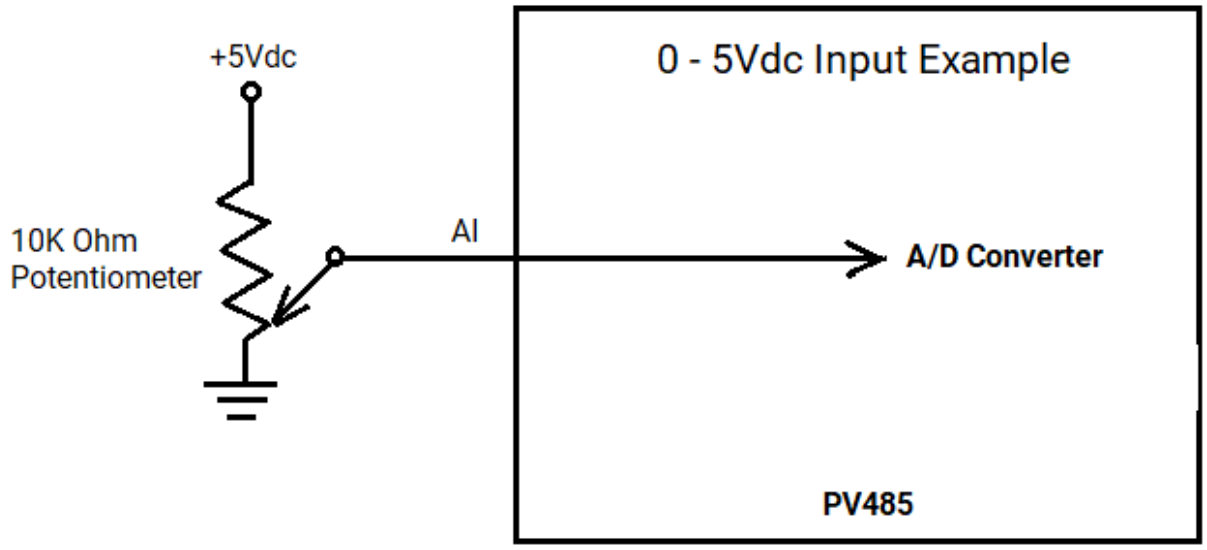
2) 4 – 20mA Mode: Powervision Returns A/D Counts, 1mA = 41.35 A/D Counts linear scale, 4mA = 165 Counts, 20mA = 827Counts, Maximum Input Range = 0mA to 24.7mA,

3) Resistive Mode: Powervision Returns A/D Counts, Usefull range is 0 to 2000 ohms, best resolution is 0 – 500 ohms. Above 2000 ohms there is progressively less A/D count change VS resistance change. The analog input is pulled high to 5Vdc through 400ohm resistor.
   Formula: A/D Count = (Rin x 1024)/(Rin + 400)

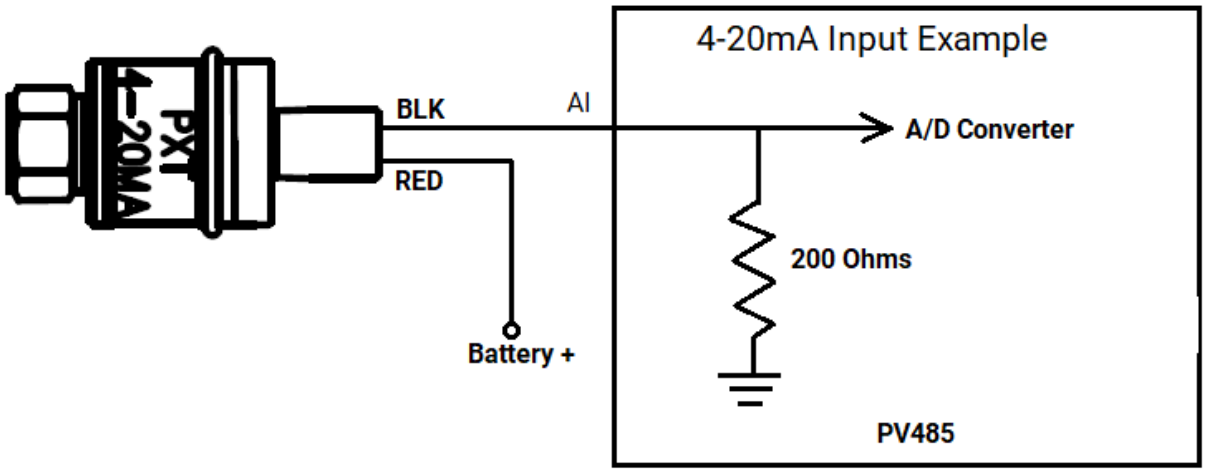
4) Digital Input 0-5Vdc Mode: Powervision Returns a 1 with a 5Vdc input, and 0 with a 0Vdc input (or open circuit). Switch trigger points are 4Vdc when going from low to high, 1Vdc when going from high to low.

5) Digital Input 400ohm Pullup Mode: Powervision Returns a 1 on open circuit, and 0 when closed to ground.

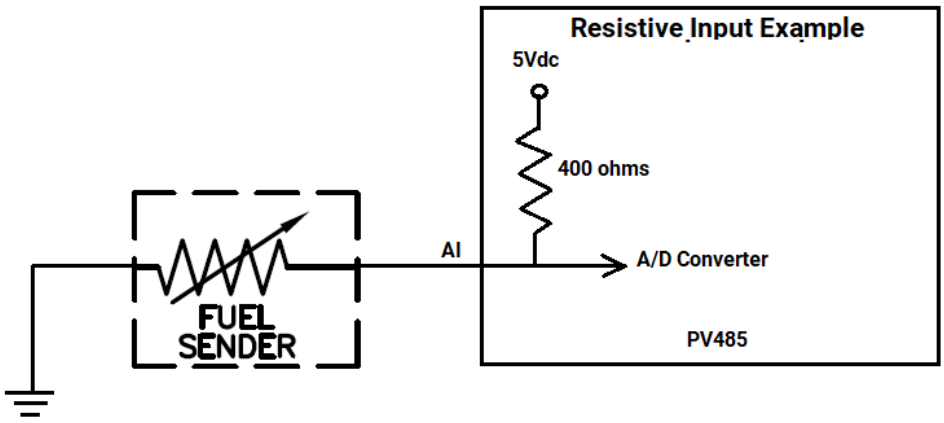
Typical 0-5Vdc Analog Input wiring



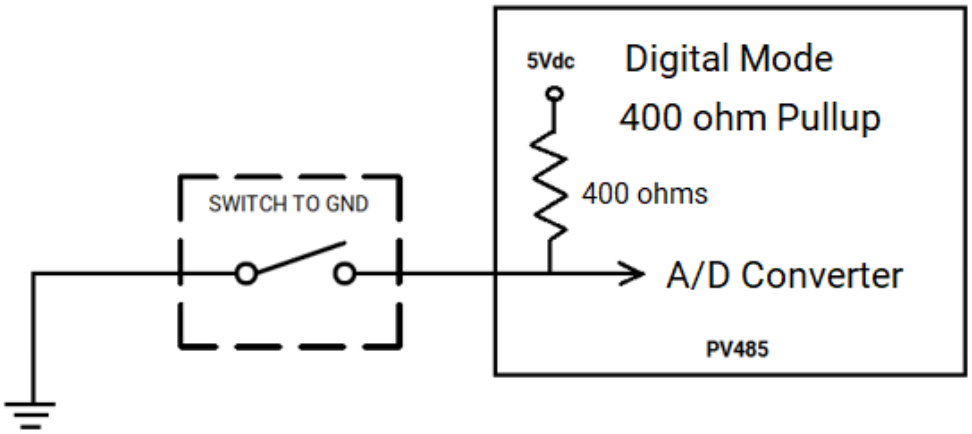
Typical 4-20mA Analog Input Wiring



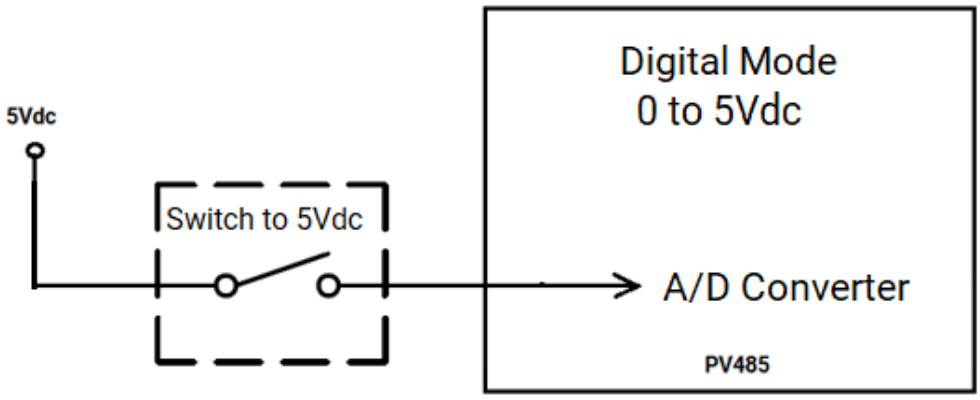
Typical Resistive Sender Analog Input Wiring



Typical Digital Mode-400ohms Analog Input Wiring



Typical Digital Mode-0 to 5Vdc Analog Input Wiring



Analog Output

The analog output sources a voltage of 0 – 5Vdc and is designed to drive a high input impedance device like the analog input of a engine controller for throttle control or similar. As such the maximum current it is capable of driving without dropping its output voltage is about 1mA at the full output level of 5Vdc. This equates to a load of about 4.4Kohms. A common ground between the equipment is required.
The output is designed for process control and not to replicate a frequency signal outut.

Typical Analog Output Wiring