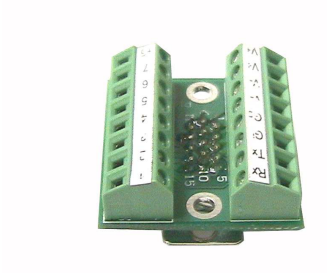
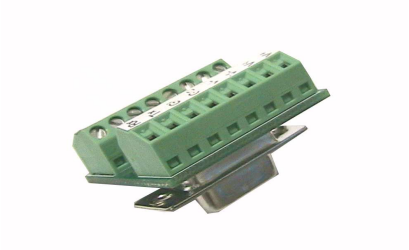
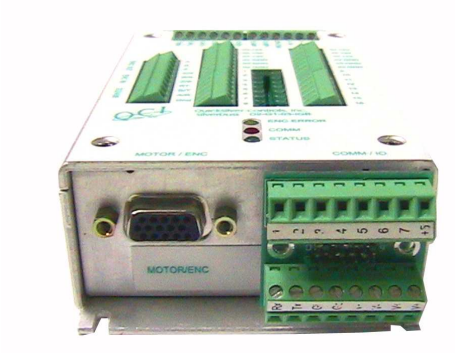
Basic Breakout With Analog Out - QCI-BO-B1A

QCI-BO-B1A







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Product Overview

All SilverDust controller/drivers can generate a pulse width modulated (PWM) output on I/O #2 using the PWM Output (PWO) command. The B1A breakout translates the PWM output into an analog output using an active filter. The resolution of the analog output is 10-bit. Actual accuracy is dependent upon system wiring and load impedance.

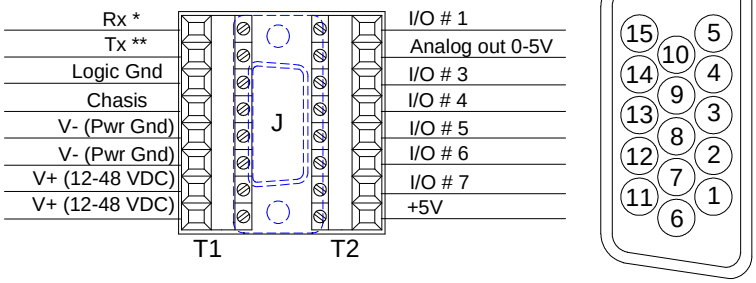
The breakout connects directly to the SMI port on SilverDust controller/drivers, and breaks out power, communication and I/O. The B1A does not work with the SilverNugget controller/drivers.

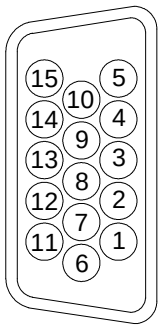
The provided screws lock the breakout to the SMI port (DB15HD connector). There are two, 8 position, terminal blocks that breakout all 15 pins.

Besides the special circuitry on I/O #2, the QCI-BO-B1A is the same as the Basic Breakout QCI-BO-B1. See Technical Document QCI-TD036 for details.

Terminal Connector Wire Range: 16-28 AWG

Pin-Out Descriptions





J

1	V+ (12-48 VDC)
2	RS-485B/RS-232 TX
3	+5V OUTPUT 100mA
4	I/O #3
5	I/O #6
6	POWER GROUND
7	V+ (12-48 VDC)
8	LOGIC GROUND
9	I/O #2 PWM
10	I/O #5
11	POWER GROUND
12	RS-485A/RS-232 RX
13	I/O #1
14	I/O #4
15	I/O #7

* RS-485 A
** RS-485 B

Note: The onboard copper weight and trace width will only allow power daisy chain up to three units.

How to Use

Configure the PWO command to get duty cycle from lower or upper word of any register. As this word ranges from -32768 to 32767, the PWM output (I/O #2) duty cycle ranges from 0 to 100% at 3.3V. The B1A filters this PWM output and amplifies it to 0-5V.

Note: PWO "Mode" parameter may have the following values:
Disable, High Word, Low Word

Use the following equation to determine the Register Value (R) for the desired B1A output voltage (Vo):

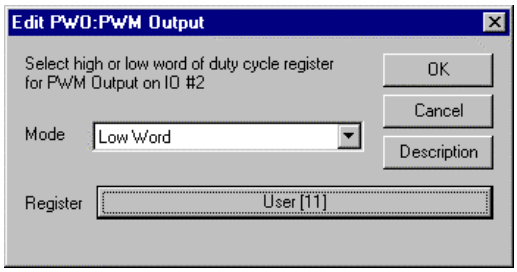
$$R = [(Vo - 2.5)/2.5]*32767$$

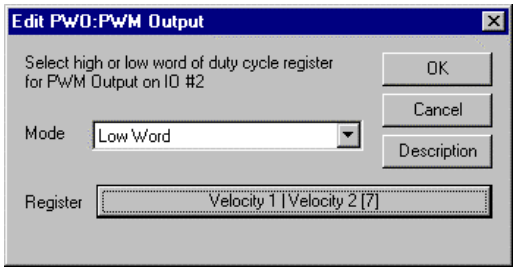
Example 1:
Desired analog output is 1.75 volts.

1) Configure PWO to get duty cycle from lower word of User Register 11.

2) Set Register 11 according to the following equation:

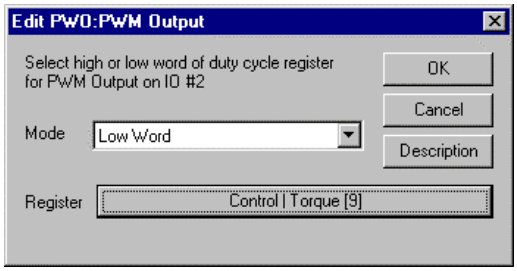
$$R = [(Vo - 2.5)/2.5]*32767$$
$$R = [(1.75 - 2.5)/2.5]*32767$$
$$R = -9830.1 \approx -9830$$





Example 2:
Output Analog Actual Velocity

All SilverLode servo systems store velocity in Register 7 [Velocity 1|Velocity 2]. Velocity 1 is the actual velocity filtered once. Velocity 2 is the actual velocity filtered twice. The above example uses Velocity 2. Velocity 2 is a signed 16-bit number where -32768 is –4000 RPM and +32767 is +4000 RPM. At zero speed, the output voltage will be 2.5 volts.

Example 3:
Using Analog Output for Torque

All SilverLode servo systems store torque in Register 9 [Control|Torque]. The lower word is the actual output torque on the motor shaft. Torque values of –30000 is –150% torque and +30000 is +150% torque. The minus and plus represents clockwise and counter clockwise torque. A value of 0 is zero torque.