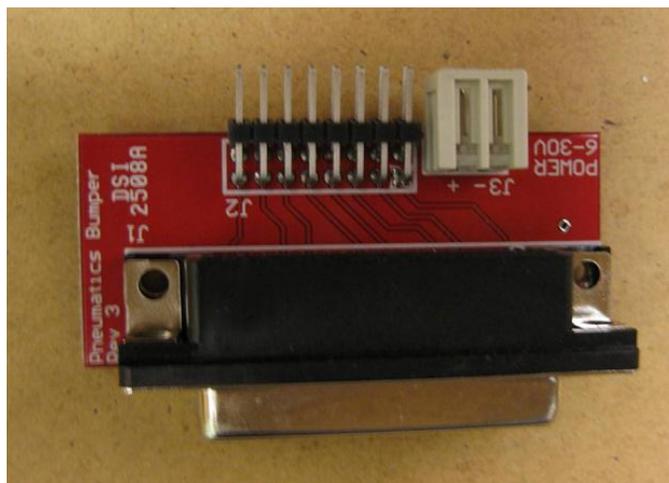


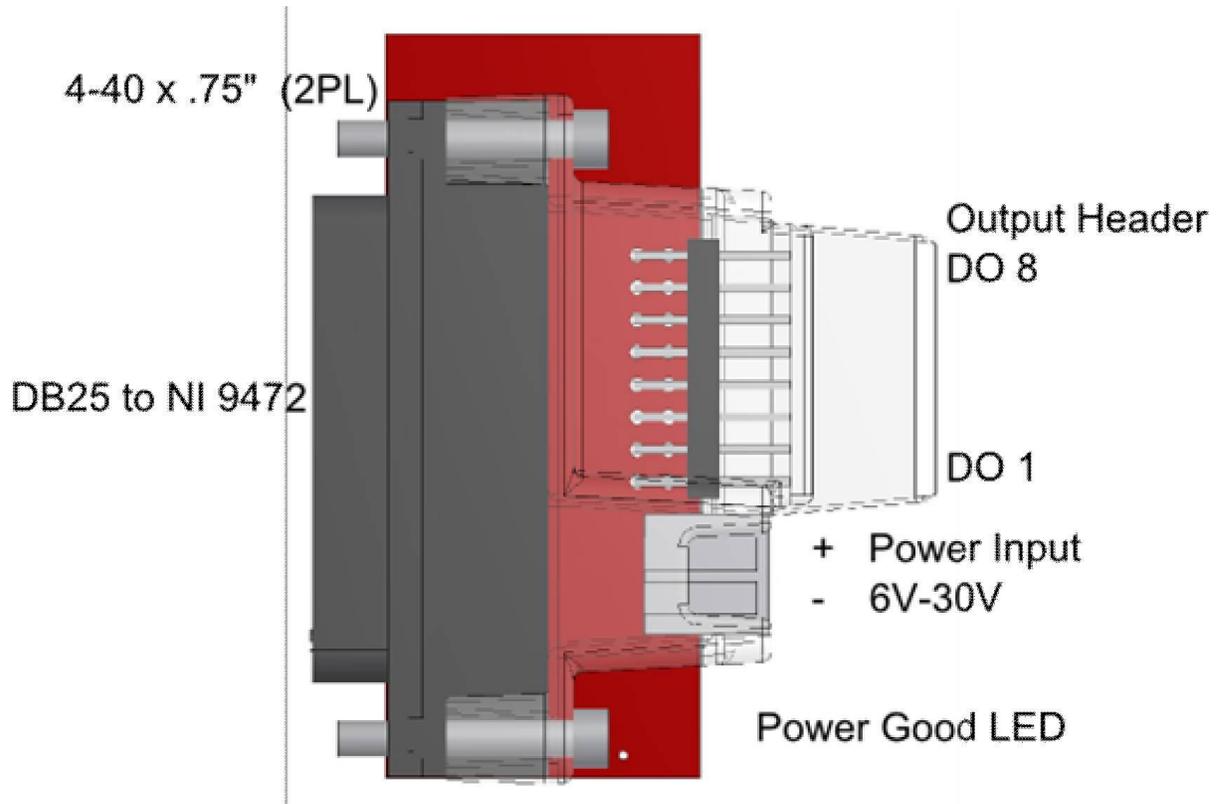
FRC[®]

FIRST[®] Robotics Competition

Solenoid Breakout Data Sheet 2012 *FIRST* Robotics Competition



Solenoid Breakout



Functional Description

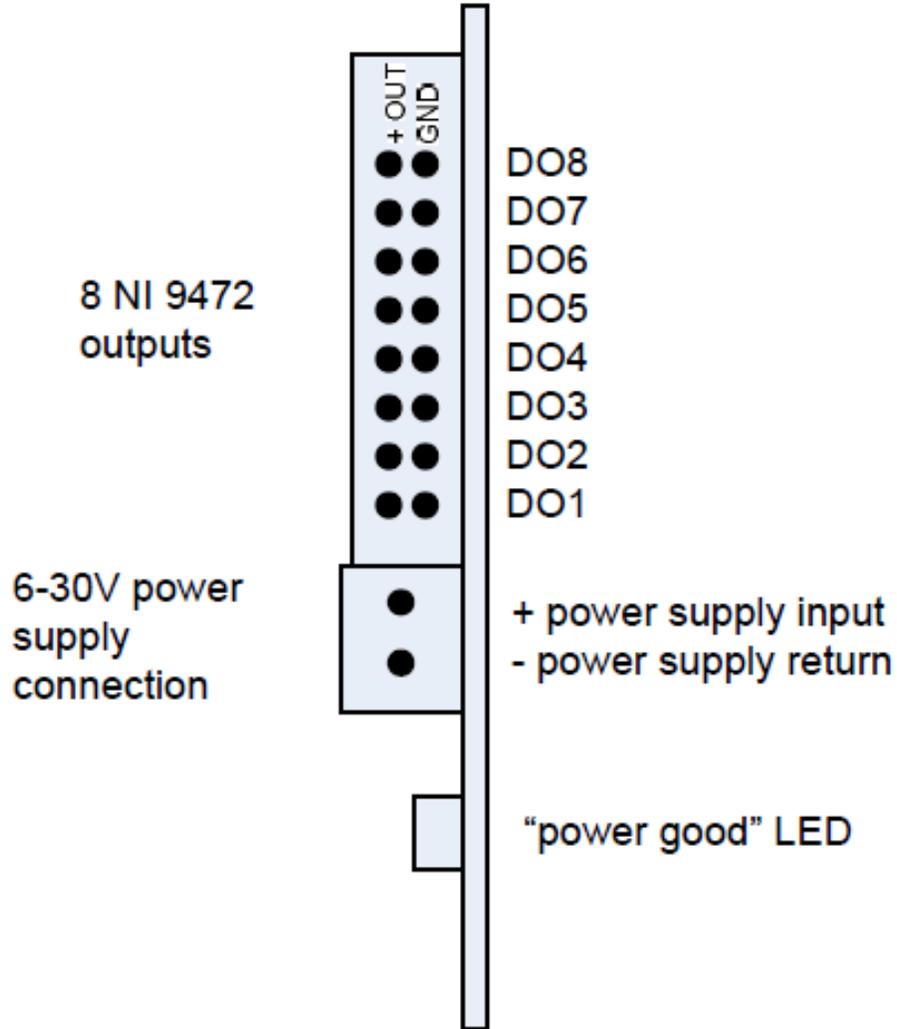
The Solenoid Breakout is designed to make interfacing with the NI 9472 Digital Sourcing Module easier for FIRST teams. It adapts the DB25 interface to the familiar two row 0.1" pin field. The included plastic shroud provides an easy way to lock the connectors.

Features

- Wide-range power input provided by the NI 9472
- 2-pin cable interface (switched power output and ground) for attaching loads with locking feature built into the plastic shroud
- DB25 connector with screw holes for securely mounting to an NI 9472 output module
- Reverse-voltage protection to avoid damage due to accidental reversal of applied power

Pinout

Solenoid Breakout – side view of connectors



PCB Reference Designator	Name	Description
J1	DB25	Mates to NI9472 (with optional cable)
J2	Digital Outputs	Mates to 2 conductor cables
J3	Power In	734-162 mates with 734-102
D1	Power LED	Lights when power is properly applied

Typical Application

** Always refer to FIRST rules for using this module in competition robots. The following sequence describes an example application that may not fully comply with FIRST rules.

- 1) Secure the Solenoid Breakout to an NI 9472 using screws
- 2) Apply power to J3 from the PD via 5A breaker and smaller WAGOs
- 3) Attach loads via 2-pin connectors to the 2x8 header with careful consideration of polarity

Specifications

Parameter	Min	Nom	Max	Units	Description
Vin Survive	-30		30	V	Survivable voltage on J3
Vin Operational	6	12	30	V	Voltage on J3 for normal operation
Iout / Channel			0.75	A	Output Current per Channel

Troubleshooting and FAQ

How do I build a cable for passing 12V power to the Solenoid Breakout?

- Take a color coded pair of 18AWG or better wire and cut to length
- Optionally twist the pair now for better cable management.
- Strip 7mm off the ends.
- To insert wire into a WAGO 734-102 connector, push down on the actuation port in back with a screw driver, or use an actuation lever.
- Insert the positive wire in the right port of the WAGO 734-102 connector. Note: the correct orientation can be verified by looking at the silk screen on the Solenoid Breakout.
- Insert the negative wire in the left port of the WAGO 734-102 connector.
- Give a smart tug to verify the connection is secure.
- Insert the WAGO 734-102 into the mating connector on the Breakout.

I have a load that takes more than 0.75A. May I use it?

- Check the FRC robot rules to ensure that your device is game legal.
- You can use several outputs together, such that each one sources up to 0.75A. Be sure to common them in the wiring (positive and negative) AND in the software.

Mechanical

