

See also: **TCI series** of available interfaces

**SS-KIT-IN TRANSDUCER CONNECTOR INTERFACE KIT – INPUT**



This kit is for users who wish to adapt their own transducers to the Biopac Student Lab *PRO* System or *AcqKnowledge* System with MP36R. The kit comes with a Smart Sensor connector, cable and components to properly interface with the transducers. The kit will allow quarter, half or full bridge transducers (pressure, force, strain, acceleration, sound, etc.) to be connected to the system.

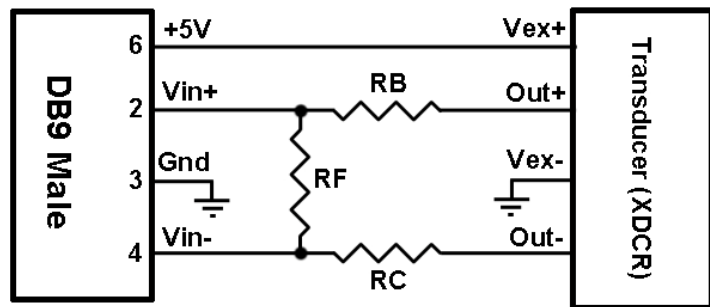
**SS-KIT-IN COMMENTS AND SUGGESTIONS**

1) **Be careful of consumption.**

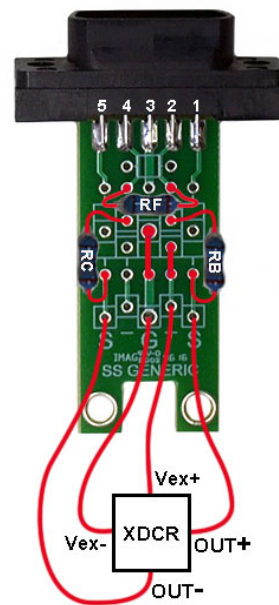
The bridge circuit should be designed so no more than 5mA are used to power the bridge. If the bridge takes more than 5mA, try reducing the voltage across the bridge by using series resistors or other kinds of regulators.

2) **Be careful of signal amplitude.**

Resistors RB, RC, and RF are used to reduce the output of the transducer to provide a signal no greater than ±2 V (MP36/45), ±V (MP35) or ±50 mV (MP30) between pins 2 and 4 on the 9 pin D-Sub (DB) Male connector. If the voltage is exceeded (of either polarity), the input amplifier stages will saturate.



*Schematic*



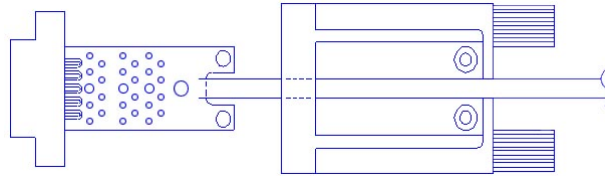
*Printed circuit board layout*

PIN	Description
1	Shield
2	Vin+
3	Ground
4	Vin-
5	Shield
6	+5 volts (ref)
7	No Connection
8	No Connection
9	-5 volts (ref)

*9 Pin D Male connector pin-outs*

SS-KIT-OUT Transducer Connector Interface Kit - Output

SS-KIT-OUT GUIDE



The SS-KIT-OUT allows custom cables to be made that connect to pins on the Analog Out port. Typical uses are:

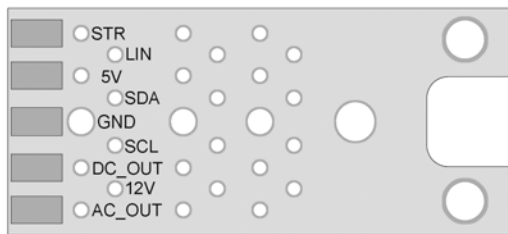
1. Synchronizing 3rd party equipment to the MP3X’s start of acquisition.
2. Listening to pulses (“clicks”) or tones with headphones which can be used for reaction time studies.
3. Controlling audio or visual stimulus device (Audio tone, LED or Strobe flash, etc.).
4. Listening to input signals such as EMG via headphones or an audio amp./speaker.

Typical Analog Out connections include:

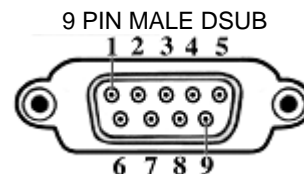
Analog Out Function	MP36/MP36R/MP35 and MP30
Listening to pulses (“Clicks”) via headphones or audio amp./speakers	Headphone “+”: pin 1 Headphones “-”: pin 3
Headphones for listening to analog signals (EMG, etc)	Headphone “+”: pin 1 Headphones “-”: pin 3
Driving output LED’s <ul style="list-style-type: none"> <li>• To limit LED current, put resistor in series with pin 2.</li> </ul>	“+”: pin 2 “-”: pin 3
Synchronizing to 3 <sup>rd</sup> party equipment	Out “+”: pin 5 Out “-”: pin 3

The “Analog Out” port on the back panel of the MP36/MP36R/MP35 or MP30 (MP3X) can output pulses (digital) or analog voltage levels, or it can pipe out analog signals from one of the input channels. The port is controlled through one of the Output Control Panels in the Biopac Student Lab (BSL) *PRO* or *AcqKnowledge* software, which is described in the BSL *PRO* and *AcqKnowledge* manuals.

The following diagrams and table show the pin-outs of the “Analog Out” port on the back of the MP3X and the Printed Circuit Board (PCB) layout of the SS-KIT-OUT. Each pin is accessible on the PCB and can be located by the label shown in the table.



SS-KIT-OUT PCB



Back Panel—MP36/MP36R/MP35 or MP30

ANALOG OUT PORT

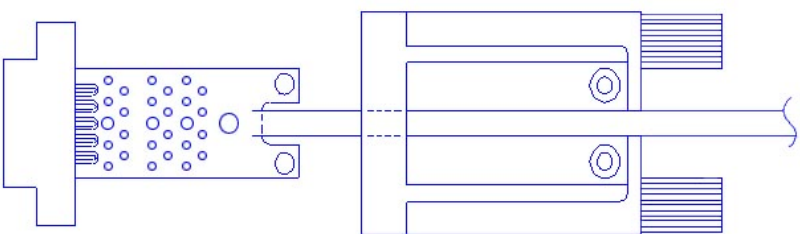
SS-KIT-OUT SPECIFICATIONS

PIN	LABEL on PCB	PIN FUNCTION	
		MP36/MP36R/MP35	MP30
1	AC_OUT	Buffered analog or pulse output A.C. coupled (1,000 uF) Analog range: +/- 2.048 V Pulse range: 0 to 2.048V	Buffered analog or pulse output A.C. coupled (2,200 uF) Analog range: +/- 2.5 V Pulse range: 0 to 2.5V
2	DC_OUT	Buffered analog or pulse output D.C. coupled Z out = 50 Ω Range: 0 to 4.096 V	Buffered analog or pulse output D.C. coupled Z out = 50 Ω Range: 0 to 5 V
3	GND	Ground	Ground
4	5V	+5 V (100mA max.)	+7.5 V (100 mA max.)
5	STR	Buffered pulse output Z out = 1 kΩ Range: 0 to 5 V	Un-buffered analog or pulse output (D.C. coupled) Z out = 1 kΩ Range: 0 to 5 V
6	12V	+12 V (100 mA max)	Not used
7	SCL	I <sup>2</sup> C SCL <b>Do not connect!</b>	Not used
8	SDA	I <sup>2</sup> C SDA <b>Do not connect!</b>	Not used
9	LIN	Monitor <b>Do not connect!</b>	Not Used

**Notes** Pins 1 and 2 For the MP36/MP36R/MP35, pins 1 and 2 can output analog or pulses when using MP3X firmware revision 1.26.037.030 or greater. When run under previous firmware, pins 1 and 2 can only be used for analog output. To identify the firmware revision, launch the BSL *PRO* or *AcqKnowledge* software and check the Help > About dialog. See the Support section at [www.biopac.com](http://www.biopac.com) for upgrade information.

Pins 3, 4 and 6 The Power supply pins (3, 4 and 6) can be used for external circuits as long as the load current does not exceed 100 mA.

ASSEMBLY NOTES



The PCB assembly fits into the thumb screw housing as shown. Two screws attach the PCB to the housing and hold the strain relief in place. The strain relief is used to prevent the cable and attached wires from pulling off the SS-KIT-OUT PCB. It is a good idea to place the strain relief over the cable prior to soldering the wires to the

PCB so that it only has to be slid on a small distance. If the strain relief fits too tightly around the cable, use water to wet the cable, allowing the strain relief to slide. Place the strain relief such that the case cover pinches and holds the cable. The stick on panel is used to cover the screws and protect the label.