

# 160 GDS Helpsheet

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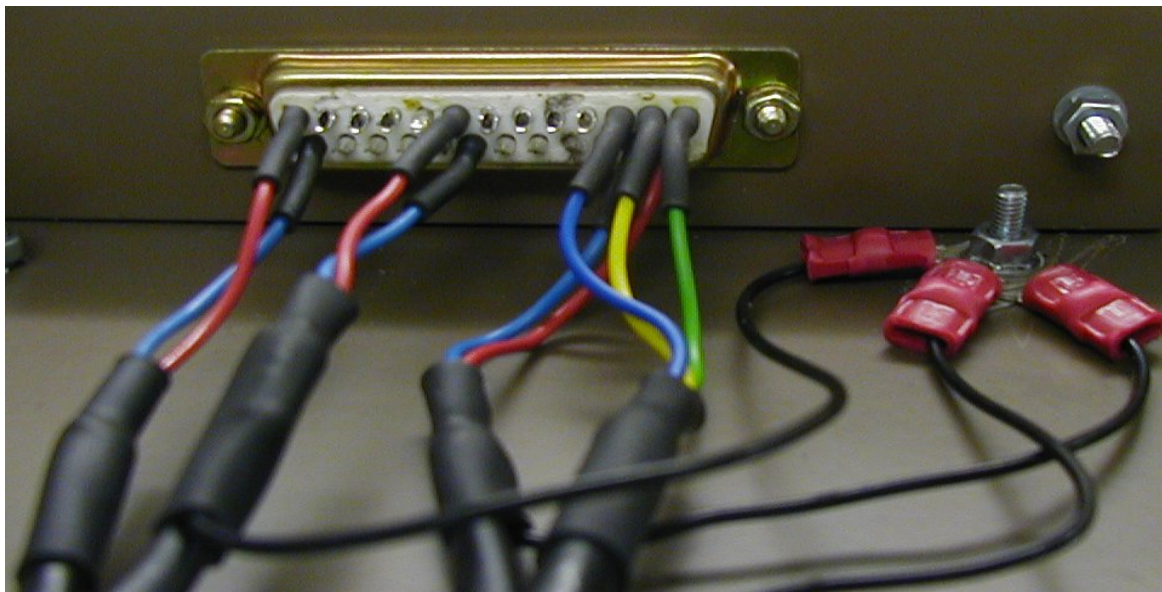
Hardware

Bender Element Box

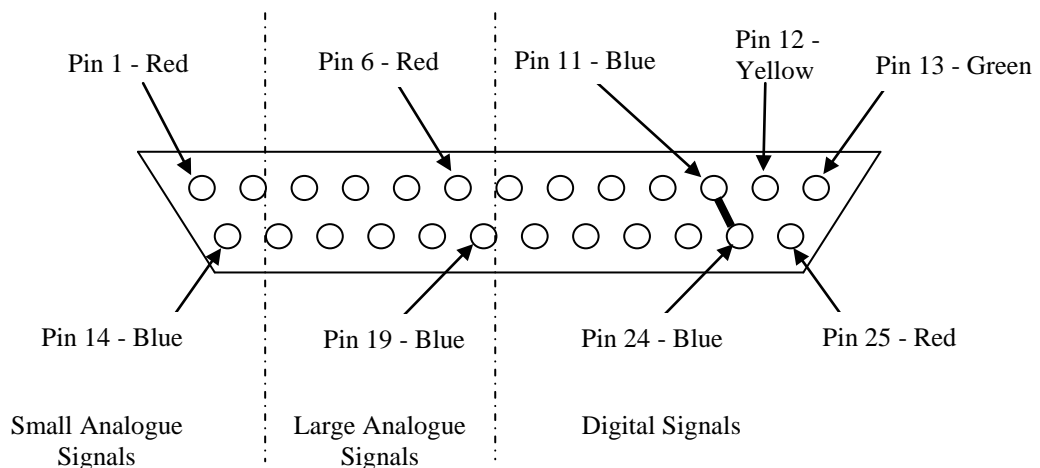
Special Version For McGill With No Data Acquisition Card

## 1. Introduction

This is a brief guide detailing the pin out arrangement of the RS232 socket on the bender element box. As there is no data acquisition card, the leads that are normally wired to it, have been connected directly to the RS232 socket, as shown in the photograph below.



There are 3 main groups of wires going into the socket; one group for digital signals, and the other two are for large and small analogue signals respectively. This is detailed in the diagram below.



## 2. Wiring Details

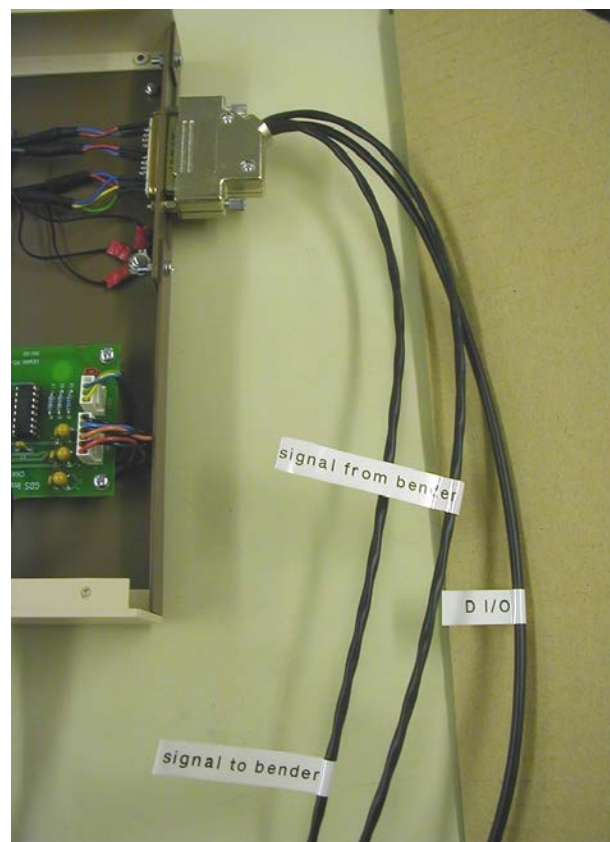
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The digital signals are sent to and from the computer. The yellow (pin 12), and green (pin 13), wires are used to send a message from the computer to set the gain on the amplifier board of the bender box. By changing the gain one can look at bender element signals of different amplitudes. The red wire (pin 25), then sends a signal back to the computer with reference to its common (the blue wire, pin 24), to confirm what the gain is. As you can see from the diagram above, there is a link between the two blues, (pins 11, and 24). This is because they are the same; that is the digital I/O signals common, and this link is made within the RS232 plug that connects onto the outside of the bender box.

The large analogue signals can be one of two things. The first is to switch the relays on the internal PCB, to change between sending and receiving S or P type waveforms, depending on the testing required. The second type of large analogue signal is an impulse sent to the transmitting bender element, to create the actual S or P wave. These signals are sent from the computer via the red wire (pin 6) with reference to its own common, the blue wire (pin 19).

The small analogue signals are those wave forms received by the second bender element, that have been amplified, and are then sent back to the computer via the red wire (pin 1), with reference to its own common, the blue wire (pin 14).

As already mentioned, there is a RS232 plug that has been made up especially for this system. This means that the three cables coming out of it, have been wired up to coincide with the pin out arrangement of the bender box socket, and cannot be used with any other system. The three cables have been labelled for easy connection to a required PC interface card. This can be seen in the photograph below.



The screens of all three cables have been grounded internally to the bender box case.