

# Connecting using the SAAR Interface Box

Measurand's SAAR Interface Box (see figure below) is used for large installations of multiple SAAs.

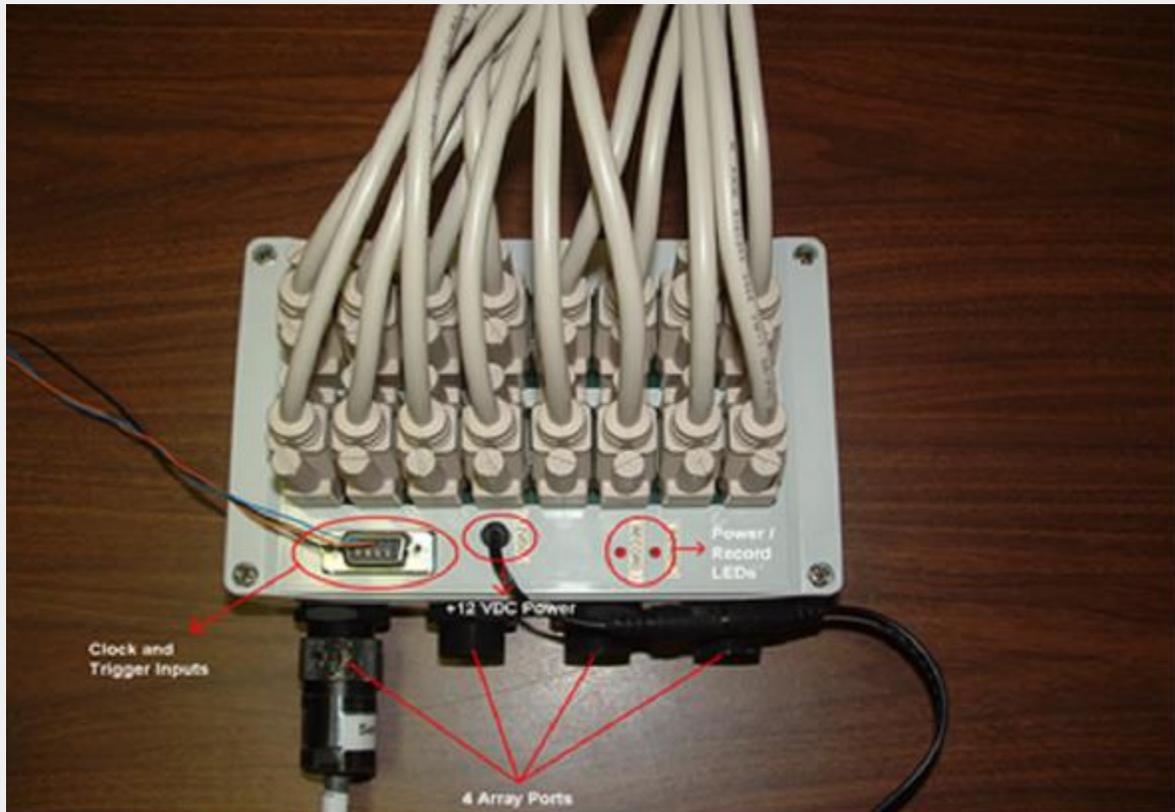


Figure 1: SAAR Interface Box

The connection box in the figure above contains 10-pin ports for up to 4 high speed research SAAs. The white serial cables go to two eight port RS-485 cards in the PC. The DB-9 connector on the box uses the following pins:

- Pin 3 = Record Data
- Pin 4 = Clock Input
- Pin 5 = Ground

Measurand's SAAR Interface Box uses multiple white serial cables that go to two eight port RS-485 cards that are housed within the PC. The figure below shows a picture of one of these cards shown outside of the PC. The clock and trigger inputs are TTL-level inputs that can be used to either clock data samples or trigger the collection of a raw data file respectively.

More information on using the clock and trigger inputs can be found in the 'SAA Setup / Advanced / Hardware Triggering' section in 'SAARRecorder'. The "Power" LED glows when the +12 VDC supply is connected and working properly. The "Record" LED glows whenever the trigger input line goes high.

The 10-pin SAA cable(s) should only be connected or disconnected when the SAAR Interface Box is NOT powered up, i.e. when its +12V power supply is unplugged from the wall.

Pin 3 of the DB-9 connector on the SAAR Interface Box is the 'Record Data' input, records raw data on the PC when SAARRecorder is configured for triggered recording (see the '**SAA Setup / Advanced / Hardware Triggering**' section in 'SAARRecorder'). When SAARRecorder is configured for triggered raw data collection (see the '**Saving and Exporting Raw Data (File)**' section in 'SAARRecorder') data is saved to a raw data file automatically whenever this line is high and SAARRecorder is running.

Pin 4 of the same DB-9 connector is the 'Clock Input' line. The rising edge of this line is used to trigger a data sample for all connected SAAs. **Measurand** recommends a 50% duty cycle for this line or a 5 ms minimum pulse width, with a typical frequency of about 32 Hz at 38400 bps. The maximum frequency possible for this line is approximately 45 Hz at 38400 bps. Higher data collection rates are possible depending on the baud rate settings used in the application (see '**Maximum Achievable Clock and Data Rates**' for details). If SAAR data samples are being triggered with a clock input, SAARRecorder must be properly configured for clocked data (see the '**SAA Setup / Advanced / Hardware Triggering**' section in 'SAARRecorder' for details).

Pin 5 of the DB-9 connector is the common or ground line.

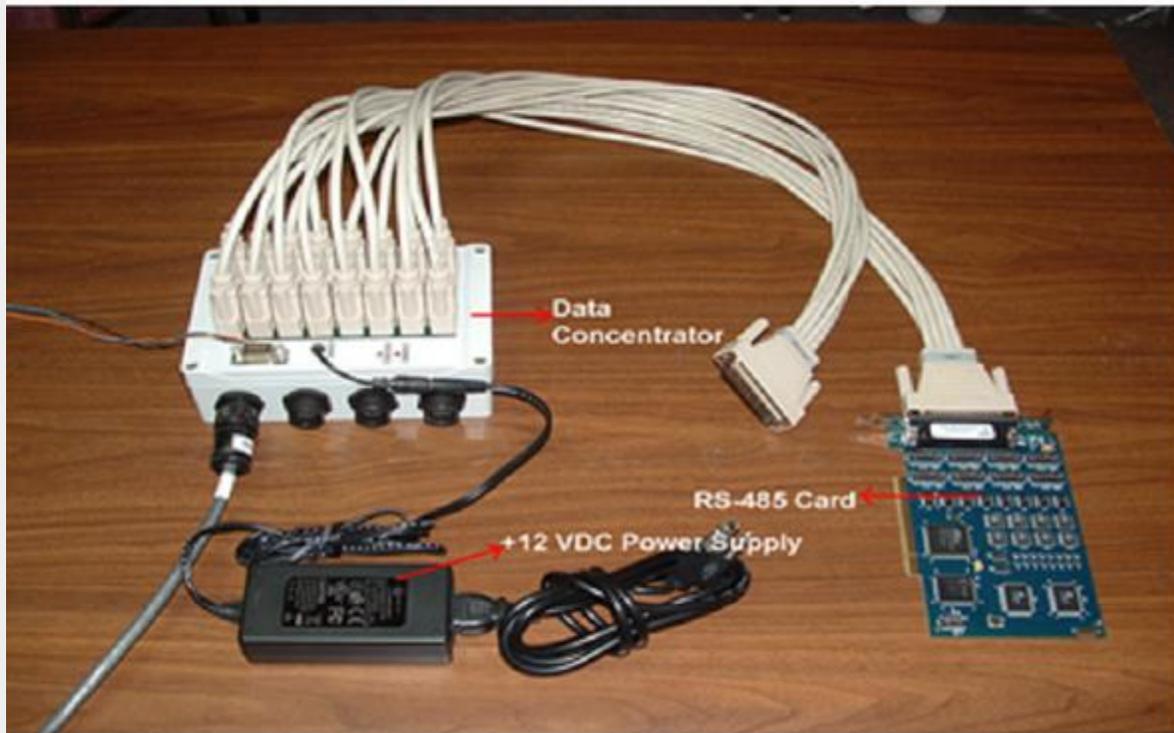


Figure 2: View of the SAAR Interface Box, RS-485 card (shown outside of the PC), SAA cable, and +12 VDC power supply

The RS-485 card used is the 7804 PCI card from SeaLevel Systems Inc (<http://www.sealevel.com/>). It can be purchased pre-configured through **Measurand** or from Sealevel directly. If purchased directly from Sealevel, it is necessary to ensure that the card is configured properly for RS-485 mode and that the switches for the pull up and pull down resistors are active.

It is also necessary to configure the Oscillator frequency for all 8 ports of each RS-485 card. Please refer to the 7804.pdf document included in SAARRecorder installation folder for details (C:\Measurand Inc\SAARRecorder\Documentation).

If 8 or fewer RS-485 ports are required, then only one RS-485 card is needed. For this case, the SAAR Interface Box should be wired as shown in the figure below.

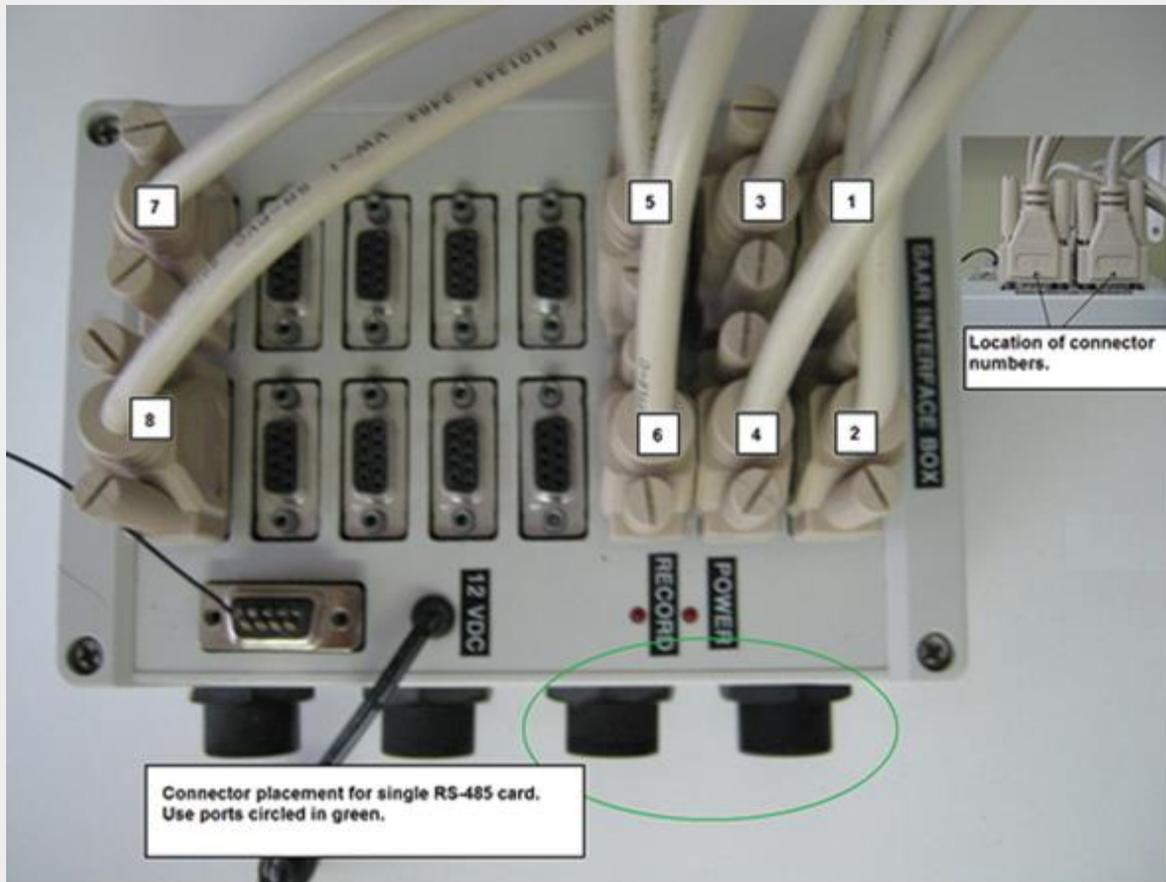


Figure 3: SAAR Interface Box cable setup for use with just a single (8-port) RS-485 card  
For step-by-step instruction on this process refer to the 'Connecting using the SAAR Interface Box' Guide.