

## **Communications For The 4000 Series Controllers**

The Specac range of 4000 Series Controllers, incorporate a WEST 6100 + controlling unit. The WEST 6100 + controlling units have the capability of being operated automatically by computer via RS232, RS485 or USB connectivity. The 4000 Series Controllers are supplied as standard without any communication port fittings, but the appropriate connectivity options can be fitted if requested.

Most computer systems are commonly supplied with one of these types of communication ports, specifically newer computers that use the USB option. This guide will instruct you how to connect your particular 4000 Series Controller to a computer with the appropriate ports. Relevant software will be required to operate the temperature controller automatically via the computer. The software may be obtained through WEST or the controller operation may be compatible with software that is used to operate a particular manufacturers spectrometer system.

The required address codes for particular operating parameters of the 4000 Series Controller have been included in the instruction manual for the Specac accessory. The address codes need to be known to allow a controlling programme to change the required parameters. The listed parameters are Read (R) Only or Read/Write (R/W). Read/Write parameters can be changed, but the factory settings are listed in the accessory manual if there is ever a need to return them to their original settings.

All of the communication leads for any connectivity (RS232, RS485 or USB) use a 9-pin connector, which is fitted to the rear of the 4000 Series Controller. The 4000 Series Controller will be internally wired for the type of connectivity device to your computer. Any internal communication cards are already fitted to the 4000 Series Controller, so the unit is ready to install and run.

Please follow the specific instructions below for connectivity of your device.

### **USB**

For USB connectivity the following items are supplied.

- (1) USB to USB connectivity lead.
- (1) USB to 9 way plug converter.
- (1) 9 way plug to 9 way plug connectivity lead.

Connect the appropriate end of the USB connectivity lead to a USB port on the computer and the other end into the USB connection of the converter.

Connect one end of the 9 way plug connectivity lead to the 9 way connector of the converter and the other end of the lead to the rear of the 4000 Series Controller.

The converter is supplied with its own software, which will need to be loaded onto your computer so that the device is recognised. (*see instructions on CD ROM*).

### **RS232**

For RS232 connectivity the following items are supplied.

- (1) RS232 to RS485 converter plug.
- (1) 9 way plug to 9 way plug connectivity lead.

The RS232 to RS485 converter plug is connected into the appropriate RS232 port of the computer.

Connect one end of the 9 way plug to 9 way plug connectivity lead into the converter and the other end of the lead to the rear of the 4000 Series Controller.

The RS232 to RS485 converter plug is self-recognising to the computer system so no loading of software is required. This device should normally work on the voltage supplied by the output of the signal supplied from the RS232 port. However, it may be necessary to increase power to the RS232 port if the computer being used does not use a high power signal. Connecting a DC power supply lead into the side of the converter can boost power. Connection is made using a 2.5mm coax connector, consisting of a small hole with a pin. The pin is positive and the outer surrounding is negative and the supply is 6v- 15v 50mA. An appropriate power supply can be found from most electrical suppliers.

## **RS485**

For RS485 connectivity an appropriate controlling lead is required to connect between the RS485 port on the computer and the 9 way plug connector at the rear of the 4000 Series Controller. Specac does not provide this connectivity lead allowing for the customer to make their own. The connectivity lead for RS485 can be as long as necessary, being very durable and robust.

The connection is made to the 9 way plug at the rear of the 4000 Series Controller across pins 3 and 8. These pins are positive (3) and negative (8) for the flow of information. Occasionally a supplier of RS485 connectivity will label the connection pins as A or B. In this instance though, the A and B pins can be either positive or negative in polarity

When connecting to the 9 way plug of the Specac 4000 Series Controller, pin 3 is **RX/TX +VE A** and pin 8 is **RX/TX -VE B**.

**If connection of the lead to these terminals does not allow for operation, swap over the two wire connections. It is possible the A and B pins are of the reverse polarity.**

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