

3 Channel Upgrade Kit

for **ITC502** and **ITC503**

Revision 3

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1 Important Information

1.1 Warnings

Before you attempt to install or operate this equipment for the first time, please make sure that you are aware of the precautions that you must take to ensure your own safety. In particular please read the Safety section of this manual.

Caution: Oxford Instruments cannot accept responsibility for damage to the system caused by failure to observe the correct procedures laid down in this manual. The warranty may be affected if the system is misused, or the recommendations in this handbook are not followed.

1.2 Important Note

This manual is part of the product that you have bought. Please keep it for the whole life of the product and make sure that you incorporate any amendments which might be sent to you. If you sell or give away the product to someone else please give them the manual too.

1.3 Conventions used in this manual

The following conventions have been followed in this manual:

Danger: Indicates that the hazard may cause death or severe injury if the instructions are not followed carefully.

Warning: Indicates that the hazard may cause injury.

Caution: Indicates that the hazard may cause damage to equipment.

Note: Something that needs to be brought to the customer's attention.

Tip: Indicates a helpful hint that may be of use to the customer.

1.4 Disposal and Recycling

Before disposing of this equipment, it is important to check with the appropriate local organisations to obtain advice on local rules and regulations about disposal and recycling.

You **must** contact Oxford Instruments NanoScience Customer Support (giving full product details) before any disposal begins.

2 Introduction

2.1 Introduction to this manual

The ITC temperature controller may be supplied with either 1 or 3 input channels. The 3 Channel Upgrade Kit provides a means of converting a single channel instrument to a three channel instrument. It consists of a single printed circuit board (PCB) providing 2 additional input channels. Each channel may be set up for any of the standard sensor ranges, as described in the ITC Operator's Handbook or the leaflet Setting Up Sensors.

2.2 Safety requirements

The following recommendations apply to electrical equipment supplied by Oxford Instruments for use with laboratory systems and specifically refer to the ITC502 or ITC503 Temperature Controller. Please familiarise yourself with the Safety statements in the Temperature Controller manual.

2.2.1 Protective ground

The instrument must always be connected to an electrical ground when it is being used, to reduce the risk of electric shocks. The ground wire (green/yellow) in the instrument power cable must be connected to the laboratory electrical ground. Only use extension cable(s) if they have an earth conductor. Do not disconnect the protective ground inside or outside the instrument and do not have external circuits connected to the instrument when its protective ground is disconnected.

Danger: **The instrument will not stop working if the earth wire is not connected, and there is no indication that you might be in danger. Make sure that it is checked by a competent person.**

2.2.2 Working environment

Warning: **Do not use electrical equipment in areas where the following are likely to be present:**

- Rain or excessive moisture
- Flammable or explosive gases

Warning: **This equipment is not designed to be water or splash proof, or to be used in areas where there are flammable or explosive gases or fumes.**

2.2.3 Repair and adjustment

Danger: **Lethal voltages are accessible inside the instrument. Disconnect the AC power supply before you remove the covers or fuses. It is not sufficient to switch off the main power switch. Only do this type of work if you are suitably qualified and sufficiently skilled to understand all the risks you are taking. There may be capacitors inside the instrument and power supply filter which are still charged to a high voltage even after the AC power has been removed. Discharge all of them carefully before you start work.**

Danger: Some fault finding and calibration operations can only be carried out with the power connected to the instrument. If you have to reconnect the AC Power supply with the protective covers removed you must remember that you are putting your life at risk.

2.3 Contents of the kit

Quantity	Description
2	Channel Input PCB Assembly
1	3 Channel I/P to Main PCB Harness
4	M2.5 x 8 mm Pan Pozi Screw
4	M2.5 Wavy Washers

3 Installation

Installation involves mounting the PCB within the ITC and using the harness provided to connect it to the main PCB and the existing input PCB. The sequence of steps given below should be followed.

- See the Safety requirements recommendations in the previous section.
- Unplug the power cable to ensure that the controller is completely disconnected from the mains.
- Unplug all cables to the sensor, auxiliary and RS232 interface sockets.
- Remove the top cover.
- Remove the self adhesive blanking plate covering the Sensor 2 and 3 input positions on the rear panel.
- Remove and discard the existing cable harness linking the input PCB to the main PCB (open the latching levers, to remove the connectors from their sockets). Fit the new 3 connector harness as shown in Figure 1. The central connector goes to the main PCB and the shorter leg to the existing input PCB. Ensure both connectors are fully inserted and the latching levers are closed.

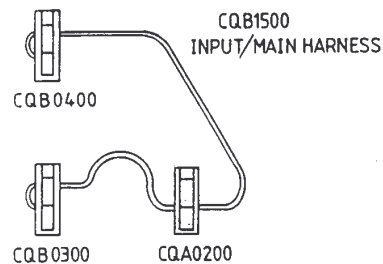


Figure 1 The new connector harness

- Remove the screws fixing the rear panel and gently move this clear of the instrument, until the new PCB can be put into position. Take care not to damage the wires linking the rear panel to the instrument. The new PCB mounts with the components on the top surface and is suspended from the top rail by two screws and spacers at the front of the board and two screws into the instrument rear panel.
- Attach the new PCB to the top rail using the screws and washers, starting at the second hole on the mounting rail.
- Replace the rear panel ensuring that the room temperature sensor fits through the small hole next to the sensor 1 connector. Hold the back of the new PCB in place on the rear panel of the instrument and fit the other screws again.
- Connect the longer leg of the new cable harness to the new PCB.
- Carefully check all above operations have been carried out correctly.

- Refer to the leaflet Setting up sensors on an ITC5 to find out how to set up the board.
- Replace the top cover and continue to follow the instructions in Setting up sensors on an ITC5.