The ITC503 is an intelligent temperature controller, with general applications in the temperature range 0.3 to 1500 K. It will accept a wide range of standard sensors as well as many custom calibration ranges. Standard ranges are held within the non-volatile memory of the individual instrument while custom ranges are linearised and loaded easily and accurately via Object Bench Software.

This model incorporates the following novel design and safety features, which ensure trouble free and reliable operation for every application:

- Optical isolation between sensor channels, main logic and output circuitry
- Microprocessor control allowing full front panel or remote programming

The ITC503 Features:

- Three term control (Proportional, Integral and Derivative)
- 80 W maximum heater power
- Remote programming through either GPIB (IEEE 488) or RS232C interfaces
- Intelligent stepper motor controller interface for remote needle valve operation
- Heater output relay which fails safe in the event of any sensor exceeding established limits or an instrument fault

Each instrument is supplied with Oxford Instruments Objectbench™ software which runs under the Microsoft™ Windows graphical user interface and offers:

- Custom range loading and linearising
- Instrument logging
- Three term control tuning
- Only available for Windows 85/98

Catalogue Number

E3-503
### Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor channels</td>
<td>1 standard, 3 optional</td>
</tr>
<tr>
<td>Input span</td>
<td>5 mV to 2 V</td>
</tr>
<tr>
<td>Input offset (V)</td>
<td>-2 to +2</td>
</tr>
<tr>
<td>Current source (±10 %)</td>
<td>10 µA, 100 µA, 1 mA</td>
</tr>
<tr>
<td>Voltage input</td>
<td>5 mV to 2 V</td>
</tr>
<tr>
<td>Output power (Max into 20 Ω load) (W)</td>
<td>80</td>
</tr>
<tr>
<td>Minimum load resistance</td>
<td>20 Ω</td>
</tr>
<tr>
<td>Digital display (No. of digits)</td>
<td>autoranging</td>
</tr>
<tr>
<td>Computer interface</td>
<td>RS232C &amp; GPIB</td>
</tr>
<tr>
<td>Power required</td>
<td>100/240 V, 50/60 Hz, 120 VA</td>
</tr>
<tr>
<td>Dimensions:</td>
<td></td>
</tr>
<tr>
<td>Freestanding (mm)</td>
<td>446 x 106 x 298</td>
</tr>
<tr>
<td>Rack mount (mm)</td>
<td>19” x 2U x 298</td>
</tr>
<tr>
<td>Weight (approx.) (Kg)</td>
<td>6.5</td>
</tr>
<tr>
<td>Catalogue number</td>
<td>E3-503</td>
</tr>
</tbody>
</table>

*Please specify mains voltage requirement on your order.*

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### Sensor Type

The instrument accepts the following sensors:

<table>
<thead>
<tr>
<th>Sensor type</th>
<th>Code</th>
<th>Range</th>
<th>Linearisation Accuracy* (Typical)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensors for which typical calibrations are included as standard:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Au + 0.03% Fe/Chromel thermocouple</td>
<td>TG5</td>
<td>2 to 500 K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>Au + 0.07% Fe/Chromel thermocouple</td>
<td>TG57</td>
<td>2 to 500 K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>Copper/Constantan thermocouple type T</td>
<td>TT4</td>
<td>-250 to 400 °C</td>
<td>0.2 °C</td>
</tr>
<tr>
<td>Copper/Constantan thermocouple type T</td>
<td>TT5</td>
<td>20 to 500 K</td>
<td>0.3 K</td>
</tr>
<tr>
<td>Chromel/Alumel thermocouple type K</td>
<td>TT10</td>
<td>0 to 1000 °C</td>
<td>0.3 °C</td>
</tr>
<tr>
<td>Chromel/Alumel thermocouple type K</td>
<td>TK13</td>
<td>-200 to 1370 °C</td>
<td>0.3 °C</td>
</tr>
<tr>
<td>Rhodium iron resistor, 27 Ω at RT</td>
<td>RF52</td>
<td>1.5 to 500 K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>Platinum resistor to DIN43760 BS1904/1984</td>
<td>RP51</td>
<td>50 to 500 K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>CLTS resistance sensor</td>
<td>RL3</td>
<td>2 to 300 K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>Silicon diode (Oxford Instruments)</td>
<td>DS32</td>
<td>2 to 300 K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>Silicon diode (Lakeshore type DT470)</td>
<td>DS31</td>
<td>2 to 300 K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>Sensors which require specific calibrations on an individual basis:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germanium resistor</td>
<td>-</td>
<td>2 to 10 K</td>
<td>0.1 K</td>
</tr>
<tr>
<td>Carbon resistor</td>
<td>-</td>
<td>1 to 300 K</td>
<td>0.5 K</td>
</tr>
<tr>
<td>Carbon glass sensor</td>
<td>-</td>
<td>1 to 300 K</td>
<td>0.2 K</td>
</tr>
<tr>
<td>Rhodium iron resistor (30 point calibration)</td>
<td>-</td>
<td>1.5 to 300 K</td>
<td>0.1 K</td>
</tr>
<tr>
<td>Gallium arsenide diode</td>
<td>-</td>
<td>2 to 300 K</td>
<td>0.2 K</td>
</tr>
</tbody>
</table>

*Overall accuracy depends on sensor type - the table shows how closely linearised data fits the sensor characteristic.*