ITC503 Temperature Controller

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

Specific applications for this instrument include:

- Laboratory cryostats
- Variable temperature inserts
- He^3 inserts
- Measurement systems requiring high precision temperature control

Single channel expansion to 3 - channels can be installed at any time.

Specifications	
Sensor channels	1 standard, 3 optional
Input span	5 mV to 2 V
Input offset (V)	-2 to +2
Current source (±10 %)	10 µA, 100 µA, 1mA
Voltage input	5 mV to 2 V
Output power (Max into 20 Ω load) (W)	80
Minimum load resistance	20 Ω
Digital display (No. of digits) autoranging	4.5
Computer interface	RS232C & GPIB
Power required	100/240 V, 50/60 Hz, 120 VA
Dimensions: Freestanding (mm) Rack mount (mm)	446 x 106 x 298 19" x 2U x 298
Weight (approx.) (Kg)	6.5
Catalogue number	**E3-503**
Please specify mains voltage requirement on your order.	

Specifications	
Standard ranges	yes
Custom ranges	yes
Capacitance range	optional
Sensor channels	1 standard 3 optional
Maximum heater power	80 W
Auto ranging	yes
Auto PID	yes
RS232C	yes
GPIB (IEEE 488)	Standard
Range handling utility	yes
Logging utility	yes
PID auto-tune software	yes

An optional heater control board allows independent heater control.

Sensor Type			
The instrument accepts the following sensors:			
Sensor type	**Code**	**Range**	**LinearisationAccuracy* (Typical)**
Sensors for which typical calibrations are included as standard:			
Au + 0.03% Fe/Chromel thermocouple	TG5	2 to 500 K	0.2 K
Au + 0.07% Fe/Chromel thermocouple	TG57	2 to 500 K	0.2 K
Copper/Constantan thermocouple type T	TT4	-250 to 400 °C	0.2 °C
Copper/Constantan thermocouple type T	TT5	20 to 500 K	0.3 K
Chromel/Alumel thermocouple type K	TT10	0 to 1000 °C	0.3 °C
Chromel/Alumel thermocouple type K	TK13	-200 to 1370 °C	0.3 °C
Rhodium iron resistor, 27 Ω at RT	RF52	1.5 to 500 K	0.2 K
Platinum resistor to DIN43760 BS1904/1984	RP51	50 to 500 K	0.2 K
CLTS resistance sensor	RL3	2 to 300 K	0.2 K
Silicon diode (Oxford Instruments)	DS32	2 to 300 K	0.2 K
Silicon diode (Lakeshore type DT470)	DS31	2 to 300 K	0.2 K
Sensors which require specific calibrations on an individual basis:			
Germanium resistor	-	2 to 10 K	0.1 K
Carbon resistor	-	1 to 300 K	0.5 K
Carbon glass sensor	-	1 to 300 K	0.2 K
Rhodium iron resistor (30 point calibration)	-	1.5 to 300 K	0.1 K
Gallium arsenide diode	-	2 to 300 K	0.2 K
* Overall accuracy depends on sensor type - the table shows how closely linearised data fits the sensor characteristic.			