

2704CP

MODELS



Atmosphere Furnace Controller/Programmer

Ideal for:

- Carburising furnaces
- Endothermic generators
- Sintering furnaces
- Incinerators
- Ceramic kilns

Features:

- Zirconia probe input
- Temperature
- Carbon, dewpoint or oxygen
- Probe cleaning
- Probe diagnostics
- Maths and logic
- Open communications

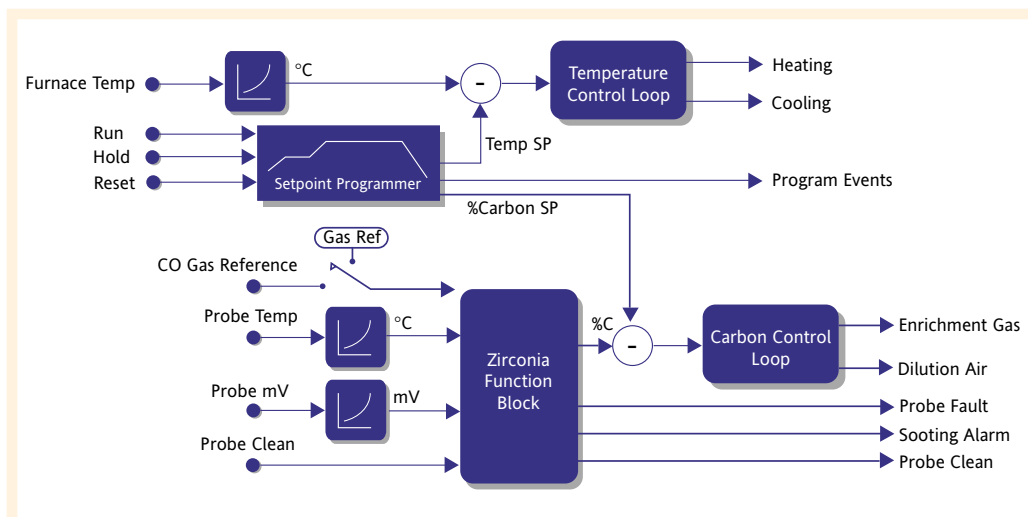
The 2704CP is a fully programmable controller suitable for precision control of temperature, carbon potential, dewpoint and oxygen in atmosphere heat treatment applications.

It is capable of being used solely to control the carbon potential, dewpoint or oxygen in a furnace, or as an integrated furnace controller where any of these variables are controlled in conjunction with temperature. Additional features provide maths and combined logic functions.

At the heart of the controller is a specially designed function block capable of accepting most zirconia probes. Standard features include an automatic probe cleaning routine, a sooting alarm and diagnostics indicating that the probe is about to fail and should be replaced.

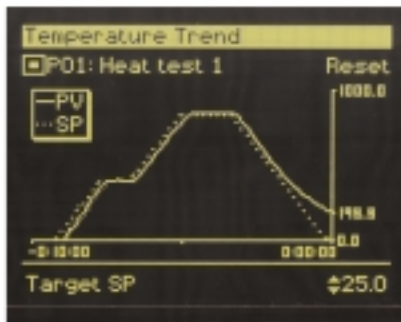
For standard applications, controllers are shipped pre-configured to the users specification, using a simple to complete order code. User customisation can be achieved by reconfiguring the controller via its front panel interface or Eurotherm's iTools configuration software.

The 2704CP is fully compatible with the standard 2704 process controller which is capable of up to three PID control loops; data sheet number HA026669.



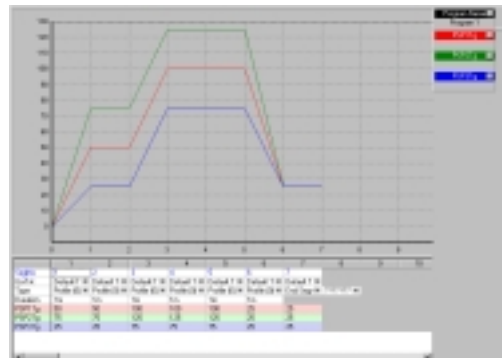
Temperature

- 50 Setpoint programs
- 16 Program event outputs
- Simple program editing
- Program graphical display
- Trend view of PV and SP



Trending enables the user to view, both current and historical information on the process on the process variable and setpoint of each control loop.

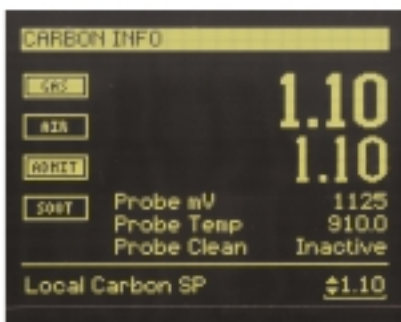
The 2704 user interface offers the user an extremely easy method of editing, selecting and running programs and all programs can be given a meaningful name. Its programmer functions are very advanced and can be easily interfaced to remote instruments including specialised Mass Flow controllers. program editing can be achieved using a PC running the iTools Setpoint Program Editor.



iTools setpoint program editor

Zirconia Input

- Compatible with most zirconia probes
- Carbon, dewpoint or oxygen
- Automatic probe cleaning
- Sooting alarm
- Probe impedance monitoring



The 2704CP can interface directly to most commonly available zirconia probes including Barber Colman, Drayton, SSI and Marathon.

The zirconia probe input can be configured to measure carbon potential, dewpoint or oxygen making the 2704CP ideal for applications such as carburising furnaces and endothermic generators.

An automatic probe cleaning routine is available where either by a digital event or on a timed basis, an output is energised to perform a probe "burn off". While the burn off is in progress and during a timed recovery period the measured PV is frozen so that closed loop control can continue. Other control options during cleaning can be configured.

Diagnostic facilities are also included. A sooting alarm indicates that potentially soot is about to be deposited in the furnace. Continuous measurement of probe impedance and automatic monitoring of the probe recovery from cleaning ensures optimum furnace operation.

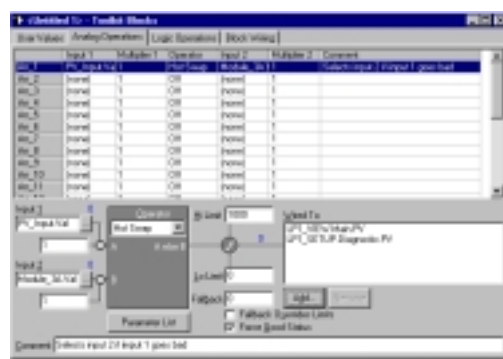
Toolkit Functions

- Mathematical calculations
- Combination logic
- Real time clock
- Timer function

Operators include;

Add, Subtract, Log, Exp, SQRT, AND, OR, Max, Min, Select and many more

Toolkit blocks allow the user to create custom solutions by internally wiring analogue and digital operations together in flexible ways. 24 analogue and 32 digital operations are available. Other functions are available including timers, totalisers and a real time clock.



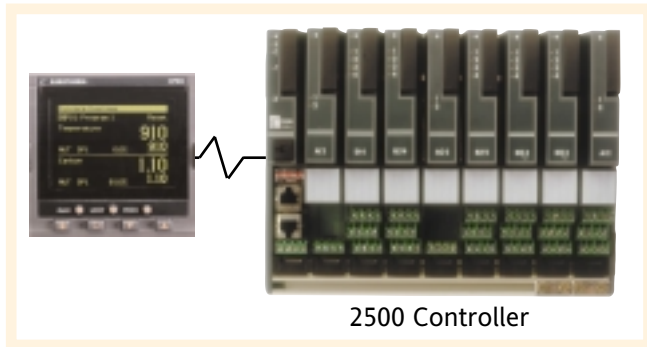
iTools toolkit block editor

Atmosphere Furnace Control System

- Furnace temperature
- Carbon potential
- Quench temperature and timing
- Digital control functions

In combination with the 2500DIN rail controller, a very powerful and low cost vacuum furnace system can be implemented. The 2704CP acts as the master temperature/carbon programmer and user interface for the 2500. A typical use of the 2500 could be to implement additional control loops such as quench oil and control the logic and timing functions of the furnace.

The 2500 can measure up to 32 thermocouple inputs, fully isolated to 250Vac potential. A strategy within the 2500 can monitor all thermocouples to detect the minimum value, which can then be sent via digital or analogue communications to the 2704CP to be used as a wait condition, ensuring temperature uniformity within the furnace and provide a guaranteed soak.



2500 Controller

2604CP

A 2604CP is also available. Its display incorporates a 2 line 5 digit display for display of setpoint and process value, plus an LCD text panel that the operator uses for entry of program data and other parameters.

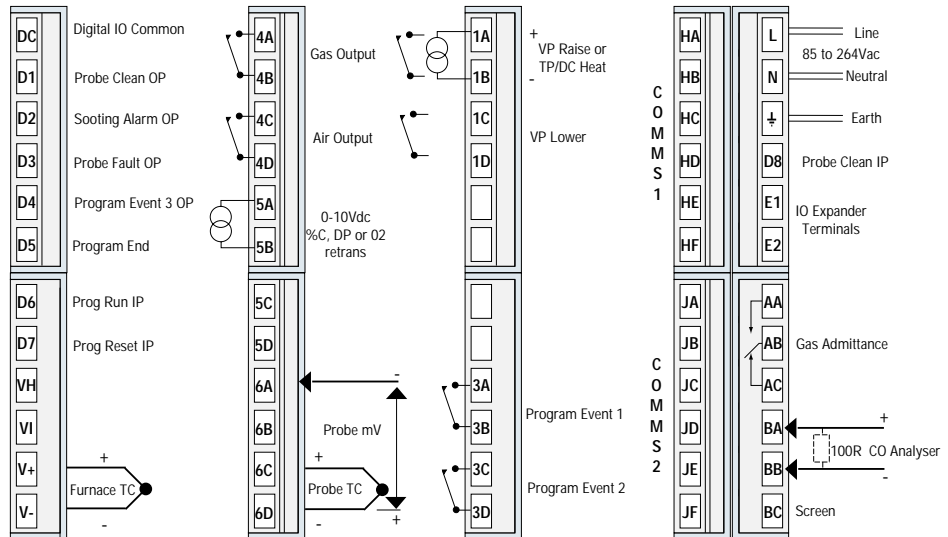
The 2604CP is functionally capable of performing the same control strategy as the 2704CP. However, the customisable display of the 2704CP significantly simplifies the user interface for the operator.



Rear Terminal Connections

Notes:

- 1) Modules 1 and 3 only present with temperature.
- 2) IO functions can be reconfigured by user.



2000IO Expansion Terminal Connections

		PrbcIn			Prbsoot			PrbFlt			PrgEv1			PrgEv2			PrgEv3			PrgEv4			PrgEnd			PrgRun					
E1	E2		A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C					
2704 Comms		24Vdc Out			24Vdc IP			24Vdc IP			24Vdc IP			24Vdc IP			24Vdc IP			24Vdc IP			24Vdc IP			24Vdc IP					
24	24	E	1+	1-		2+	2-		3+	3-		4+	4-		5+	5-		6+	6-		7+	7-		8+	8-		9+	9-		10+	10-
		PrgRun			PrgRst			PrgHld			Wait A			Wait B			Wait C			SegAdv			PrgAdv								

Ordering codes

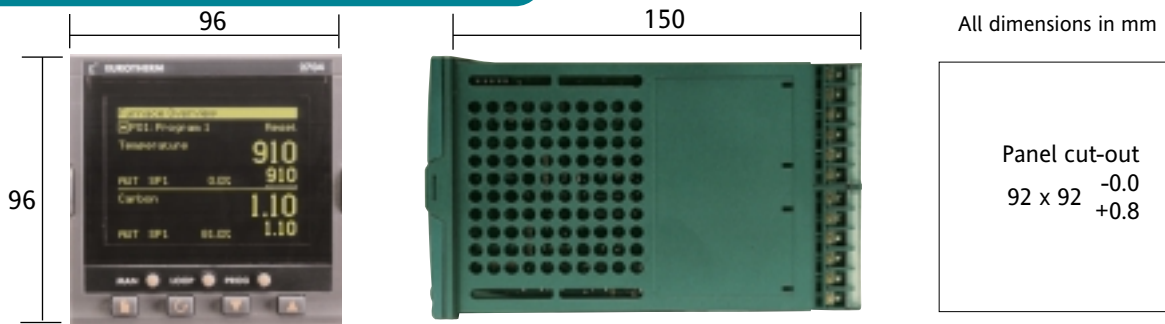
Controller Type	Supply Voltage	Controller Function	Furnace Control Sensor	Temperature Control Output	Zirconia Probe Type	Probe TC	Gas Control Output	Zirconia Retransmission	CO Analyser Input	H Comms Slot	J Comms Slot	Toolkit Blocks	Manual
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Controller Type	Furnace Control Sensor	Zirconia Probe Type	Gas Control Output	H Comms Slot	Toolkit Blocks
2604CP 2604 Standard 2604CPF 2604 Profibus 2704CP 2704 Standard 2704CPF 2704 Profibus	X Unconfigured K Type K N Type N R Type R S Type S B Type B	MV Probe Millivolts DP Dewpoint OX % Oxygen OP PPM Oxygen OL Log Oxygen BC Barber Colman DR Drayton MC MMI Carbon MD MMI Dewpoint AC Accucarb SS SSI MI MacDhui AA AACC BH Bosch Carbon BO Bosch Oxygen	TP Time Proportioning OF On/off	XX Not fitted A2 232 Modbus Y2 2 Wire 485 Modbus F2 4 Wire 485 Modbus AE 232 Bisync YE 2 Wire 485 Bisync FE 4 Wire 485 Bisync PB Profibus DN DeviceNet	XX Standard U1 Toolkit level 1 U2 Toolkit level 2
Supply Voltage	Temp Control Output	Probe TC	Zirconia Retransmission	J Comms Slot	Manual
VH High voltage VL Low voltage	XX Not fitted TP Time proportioning VP Valve Position OF On/Off 4mA20 4-20mA 0mA20 0-20mA 0V10 0-10Vdc 0V5 0-5Vdc 1V5 1-5Vdc	X Unconfigured K Type K N Type N R Type R S Type S B Type B	XX Not fitted 4mA20 4-20mA 0mA20 0-20mA 0V10 0-10Vdc 0V5 0-5Vdc 1V5 1-5Vdc	XX Not fitted A2 232 Modbus Y2 2 Wire 485 Modbus F2 4 Wire 485 Modbus M1 232 Master M2 2 Wire 485 Master M3 4 Wire 485 Master	ENG English FRA French GER German
Controller Function	CO Analyser Input	Notes:			
CXX Carbon controller DXX Dewpoint controller OXX Oxygen controller DTX Dewpoint/Temp controller OTX Oxygen/Temp controller CTX Carbon/Temp controller CTP Carbon/Temp programmer DTP Dewpoint/Temp programmer OTP Oxygen/Temp programmer	XX Internal 4mA20 4-20mA 0mA20 0-20mA 0V10 0-10Vdc 0V5 0-5Vdc 1V5 1-5Vdc	1. Basic controller includes 8 digital registers, 4 timers and 4 totalisers. Toolkit 1 includes 16 analogue, 16 digital, pattern generator, digital programmer, analogue switch and 4 user values. Standard configuration uses some digital registers. 2. Toolkit 2 includes Toolkit 1 plus extra 8 analogue, 16 digital and 8 user values. 3. Temperature units will be °C unless ordered by USA when units will be °F.			

IO Expander

2000IO	1 VL	2 10LR	3
1 Supply	2 IO Set 1	3 IO Set 2	
VL Low voltage	IOLR10 Logic in/ 10 Relay out	XXXX None fitted IOLR 10 Logic in/ 10 Relay out	

Dimensional details



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