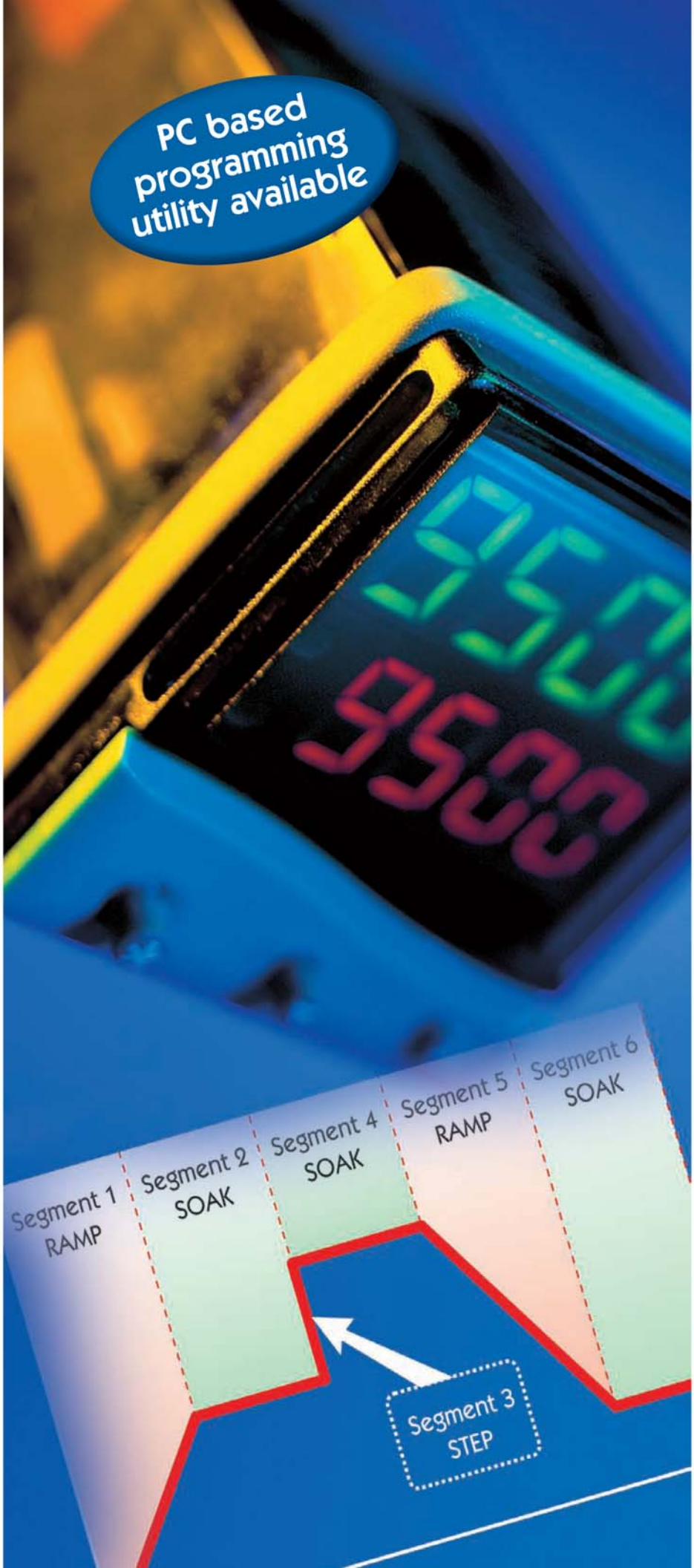


WEST Control Solutions

The CAL 9500P

Programmable Profiling Temperature & Process Controller

CAL Controls

The CAL 9500P Programmable Temperature / Process

The CAL 9500P programmable process controller

The CAL 9500P is a versatile programmable controller for temperature and process control applications. It is designed to offer the highest functionality in a 48mm x 48mm (1/16TH DIN) package.

The 9500P can be factory configured in a range of process control or temperature control options making the controller dedicated to the application, ideal for both OEM and manufacturing process applications. This combination of programmable ramp/soak profiles, process control inputs and 3 outputs, together with RS232 or RS485 comms makes the CAL 9500P a unique and affordable package.

Note:
Standard colour is Jade Green, other colours are subject to minimum order quantities.

Controller functionality

- Full P.I.D. operation
- Autotune at 75% of set-point or at set-point
- Heat-cool operation
- RS232 or RS485 communications options
- CE, UL & CSA compliant

Inputs

- Thermocouples & RTD (PT100, 2 or 3 wire)
- Analogue – 0-20mA, 4-20mA, 0-50mV, 0-5V, 0-10V

Outputs (total of three outputs)

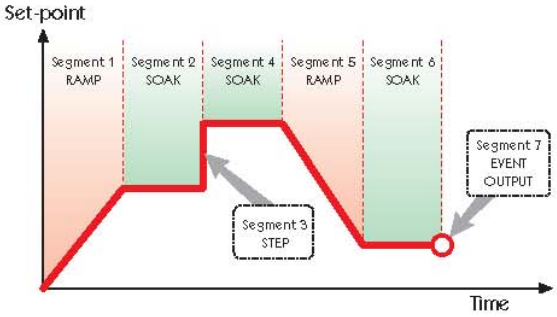
- Solid state relay drive (SSD) and Relays (2 amp)
- Analogue – 4-20mA, 0-5V, 0-10V

Programmer functionality

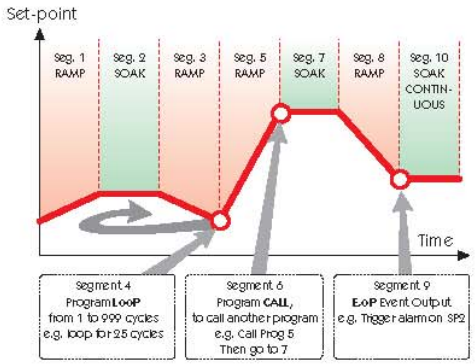
- Up to 31 programs (profiles)
- Up to 126 segments
- Unlimited use of event outputs via the 2nd and 3rd outputs
- Copy/Paste/Edit/Delete functions to simplify program building
- Call another program as a sub-program segment
- Up to 999 program loop cycles, or continuous loop cycling
- Hold back function, to ensure the next segment is not started until the last segment reaches the set-point
- 3 power fail recovery options, (Hold, Continue or Reset)
- Front panel interrogation of the program position
- Memory usage indication during programming.

(note: program capacity is a memory function and different types of segment use more/less memory).

Profile of a single program



The CAL 9500P is potentially **the most versatile and flexible controller** in its size and price range. The program below shows what is possible from this unique controller.



Visit our website for - pdf technical manuals,

Controller with Communications & Software Support

CAL 9500P Specifications

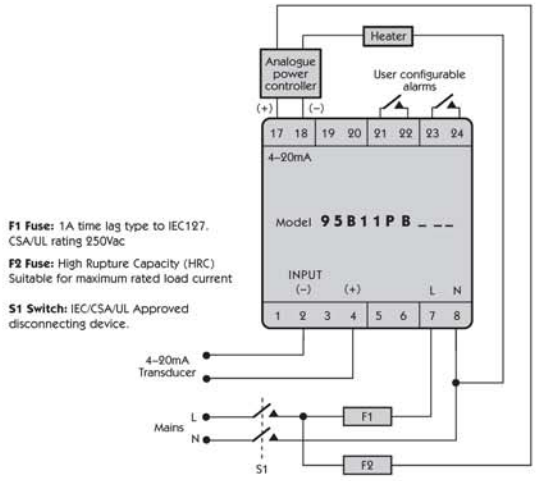
Thermocouple	
9 types:	B, E, J, K, L, N, R, S, T
Standards:	IEC 584–1–1 : EN60584–1
CJC rejection:	20:1 (0.05°/°C) typical
External resistance:	100Ω maximum
Resistance thermometer	
RTD/Pt100	2 or 3 wire
Standards:	IEC751: EN60751 (100Ω 0°C/138.5Ω 100°C Pt)
Bulb current:	0.2mA maximum
Analogue process inputs	0 to 50mV, +/- 0.1%. 0-20mA, 4-20mA, +/- 0.1%. 0-5V, +/- 0.1%. 0-10V, +/- 0.1%
Applicable to all Thermocouple and RTD inputs (SM =sensor maximum)	
Calibration accuracy:	+/- 0.25% SM +/- 1°C
Sampling frequency:	input 10Hz, CJC 2 sec.
Common mode rejection:	Negligible effect up to 140dB, 240V, 50-60Hz
Series mode rejection:	60dB, 50-60Hz
Temperature coefficient:	50ppm/°C SM typical
Reference conditions:	22°C +/- 2°C, rated voltage after 15 minutes settling time.
Output devices *(check configuration)*	
SSd1 and SSd2:	Solid state relay driver: To switch a remote SSR 6Vdc (nominal) 20mA non-isolated
Relay 1,2,3	Miniature power relay: Form A/SPST contacts (AgCdO): 2A/250Vac resistive load
Analogue output:	4–20mA 500Ω max +/- 0.1% full scale typical 0–5Vdc 10mA (500Ω min) +/- 0.1% full scale typical 0–10Vdc 10mA (1KΩ min) +/- 0.1% full scale typical
General	
Displays:	Upper, 4 Digits, high brightness green LED. 10mm (0.4") high. Lower, 4 Digits, high brightness orange LED 9mm (0.35") high. Digital range -199 to 9999. Hi-res mode -199.9 to 999.9. LED output indicators - SP1 square, green; SP2/SP3 round, red
Keypad:	3 elastomeric buttons
Programmer functions:	
Segments:	Total of 126 per program
Programs:	Maximum of 31 programs
Program memory:	351 Bytes (see memory allocation table)
Environmental	
Humidity:	Max 95% non-condensing
Altitude:	up to 2000M
Installation:	Categories II and III
Pollution:	Degree II
Protection:	NEMA 4X, IP66 (Front panel only)
EMC emission:	EN50081-1 FCC Rules 15 subpart J Class A
EMC immunity:	EN50082-2
Ambient:	0-50°C (32-130°F)
Mouldings:	flame retardant polycarbonate
Weight:	180g (6.4 oz)
Safety:	EN61010–/CSA22.2 No 1010.1 92 (see users manual)
Dimensions	
Front facia:	51.0 x 51.0mm (2.0" x 2.0") (includes gasket)
Sleeve length:	106.7mm (4.2") (with gasket fitted)
Instrument body:	44.8 x 44.8mm (1.76" x 1.76")
Overall length:	116.2mm (4.57")
Supply Voltage:	100–240Vac, 50–60Hz +/- 10% maximum permitted fluctuation
Power Requirements:	6.0VA (nominal)

application notes, tutorials and much more

www.cal-controls.com

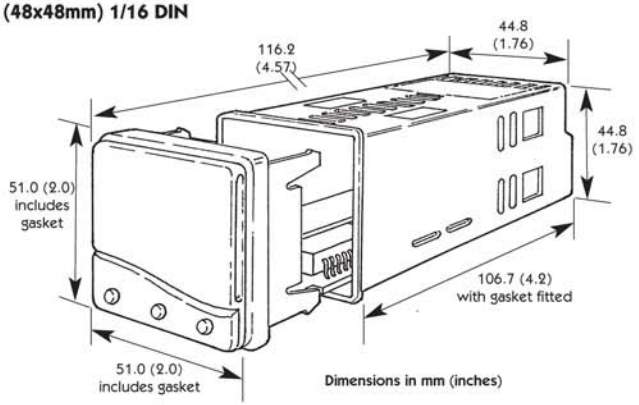
Typical Application

In this example the load temperature is monitored by a temperature transducer/transmitter which provides a 4–20mA input signal to the controller. The 4–20mA output has been allocated to SP1 to drive an SCR power controller providing a phase angle controlled output to the heater.



Model 9500P Dimensions

(48x48mm) 1/16 DIN



Ordering information codes

		Code
Model	48 x 48 mm	95
Outputs	SSd / relay	00
	relay / relay	11
	SSd / SSd	22
	4-20mA / relay	B1
	4-20mA / ssd	B2
	0-5V / relay	C1
	0-5V / ssd	C2
	0-10V / relay	D1
	0-10V / ssd	D2
Output 3	Always relay	1
Programmer		P
Inputs	Sensor	A
	4-20mA	B
	0-5V	C
	0-10V	D
Communications	None fitted	0
	RS232 fitted	2
	RS485 fitted	4
Unused		00

Ordering example 1

Model 9500P ssd/relay/relay outputs 4-20mA input, RS485 fitted

95	00	1	P	B	4	00

Ordering example 2

Model 9500 with 4-20mA/ssd/relay outputs, sensor input, no comms

95	B2	1	P	A	0	00

Codes for additional software and hardware

CALgrafix	10	03	GB	0	0	0
Communications board RS232	3C	00	00	2	0	0
Communications board RS485	3C	00	00	4	0	0
RS232 to RS485 converter	3C	25	00	0	K	3
CALpoll / CALvb	Available on the web					