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WEST Control Solutions

Product Brochure

The CAL range of temperature controllers



3300, 9300 & 9400 Controllers with RS232/485 Communication

The CAL range of temperature controllers are designed to be easy to use, low cost and reliable in the most demanding applications, including plastics, packaging, drying and laboratory equipment.

- Easy-to-use auto-tune program
- Simple menu-driven programming
- Full P.I.D. operation
- Single ramp/soak (dwell) program
- Heat/cool operation
- IP66 protection
- CE, UL, FM



9400



9300

Integrated auto-tune makes P.I.D. control simple and efficient, while the unique dAC function minimises overshoot problems often associated with other similar controllers.

Inputs and Outputs:

- Thermocouple and PT100 (2 wire)
- Two outputs: SSR and/or Relay
- 5 alarm modes, full scale (high or low), deviation (high or low) & band
- RS232 or RS485 MODBUS communications RTU (retrofittable)



3300

9500P - Temperature and Process Controller



The 9500P is a uniquely versatile and affordable controller with profiler for temperature and process applications. It is designed to offer the optimum functionality in a 48mmx48mm (1/16th DIN) package.

The 9500P shares the same features as the 3300, 9300 and 9400 and also offers:

Programmer functionality

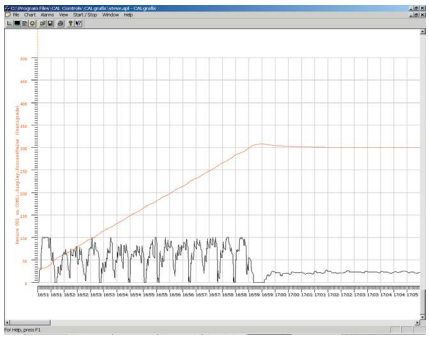
- Up to 31 programs (profiles)
- Up to 126 segments
- Event outputs via the 2nd and 3rd outputs
- Copy/Paste/Edit/Delete functions to simplify program building
- Call another program as a sub-program segment
- Up to 999 program loop cycles, or continuous loop cycling
- Hold back function, to ensure the 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 segments use more or less memory).

Inputs and Outputs:

- Input: Thermocouple PT100 (2 or 3 wire), 4-20mA, 0-5V or 0 to 10V
- 3 Outputs: Relay, SSD, 4-20 mA 0-5V and 0 to 10V

Process Monitoring and Configuration Software



Cost-effective process monitoring and controller configuration software, providing even greater value to CAL's range of temperature controllers. With powerful functions including data logging and process data archiving, chart recorder, virtual instrument display and on-screen alarm and display, CALGrafix software is the ideal solution for control of critical data, for quality control, and health and safety and machine development and build.

All features integrate seamlessly within one single user interface, providing total configuration features for ultimate control and even cloning of instrument settings.

Advantages of using CALgrafix:

- Reduce installation time – quick and simple controller configuration
- Access to detailed process data via the charting and logging features
- Lower cost alternative to SCADA
- Simple set up, no programming skills required
- Reduce changeover time for different process recipes

Configuration:

- Parameter set-up of 33/93/9400 and 9500P controllers
- Click and drag graphical profile set-up for 9500P controllers
- Multiple programs and profiles can be saved and recalled for various applications
- Instrument setting cloning reduces set up time

CALgrafix Applications:

- Environmental and test chambers
- Plastic injection and extrusion machines
- Ovens, autoclaves, furnaces, and kilns
- Scientific research and testing
- Food processing equipment

and your application ……

Ordering information

3300, 9300, 9400

33	00	00	4	3	0

Outputs (Reversible)
- 00 SSd / 2A relay
- 11 2A relay / 1A relay
- 22 SSd / SSd

Supply
- 0 100-240V AC
- 3 12-24V AC/DC (1)

Comms
- 0 Not fitted
- 2 RS232 fitted
- 4 RS485

Model
- 33 1/32 DIN (48 x 24mm)
- 93 1/16 DIN (48 x 48mm)
- 94 1/16 DIN (48 x 48mm) dual display

(1) Models 3311, 9311, 9400, 9411 and 9422 are not currently available in low voltage 12-24V option.

9500P

95	00	1	P	B	4	00

Outputs 1 & 2
- 00 SSd / relay
- 11 relay / relay
- 22 SSd / SSd
- B1 4-20mA / relay
- B2 4-20mA / SSd
- C1 0-5V / relay
- C2 0-5V / SSd
- D1 0-10V / relay
- D2 0-10V / SSd

Output 3
- 1 Relay

Inputs
- A Sensor (thermocouple or RTD)
- B 4-20mA
- C 0-5V
- D 0-10V

Comms
- 0 Not fitted
- 2 RS232 fitted
- 4 RS485 fitted

Accessories

CALgrafix software

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

Technical Specifications

Input	
Thermocouple	9 types: Type 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 Temperature Detector – (RTD)	**3300 / 9300 / 9400:** PT100 2 wire, **9500P:** PT100 2 or 3 wire
Standards	IEC751: EN60751 (100Ω 0°C/138.5Ω 100°C Pt)
Bulb current	0.2mA maximum
Linear process inputs	Analogue process inputs 0 to 50mV, +/- 0.1%. **9500P:** 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	**3300 / 9300 / 9400:** 150ppm/°C SM, **9500P:** 50ppm/ °C SM typical
Reference conditions	22°C ±2°C, rated voltage after 15 minutes settling times
Output devices	
SSd	SSd1 and SSd2: Solid state relay driver: To switch a remote SSR 6Vdc (nominal) 15mA non-isolated
Miniature power relay	Relay **1,2,3 Miniature power relay: Form A/SPST contacts (AgCdO): 2A/250Vac resistive load. 3300 / 9300 / 9400:** Relay 1, 2 only
Linear outputs: **9500P only**	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	Main (upper) display:, 4 digits high brightness green LED, 10mm high Lower display **9400 / 9500P:** 4 digits high brightness orange LED, 9mm high
LED output indicators	Flashing SP1 square, green, SP2 round red
Keypad	3 full travel elastomeric buttons
Environmental	
Safety	UL 873, EN 61010, CSA 22.2 No. 1010.1-92
Humidity	Max 95% non-condensing
Altitude	Up to 2000m
Installation	Categories II and III
Pollution	Degree II
Protection	NEMA 4X, IP66
EMC emission	EN50081-1, FCC Rules 15 subpart J Class A
EMC immunity	EN50082-2
Ambient	0–50°C
Mouldings	Flame retardant polycarbonate
Dimensions	
Front facia Models	**9300 / 9400 / 9500P:** 51.0 x 51.0mm (includes gasket). **3300:** 51.0 x 28.5 (includes gasket)
Controller depth All models	106.7mm (with gasket fitted)
Fascia dimensions	**9300 / 9400 / 9500P:** 44.8 x 44.8mm, **3300:** 44.8 x 22.0mm
Overall length	All models – 116.2mm
Weights	**3300:** 110g, **9300:** 120g, **9400:** 130g, **9500P:** 180g (6.4oz)
Supply Voltage	100–240Vac, 50–60Hz +/- 10% maximum permitted fluctuation, 12V - 24V (AC/DC) +/-20% 4.5 VA Polarity not required
Digital range: 9500P only	199 to 9999. Hi-res mode -199.9 to 999.9
Programmer: 9500P only	
Segments	Total of 126 per program
Programs	Maximum of 31 programs
Program memory	351 Bytes
Approvals	CE, UL, cUL, FM (3545)

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