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The CAL range of Process Controllers







CAL Controls

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The range of P.I.D. Process Controllers with Modbus

CAL innovators in control

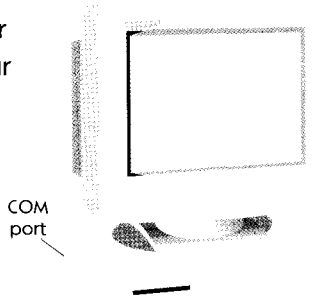
Established in 1963, CAL is a dynamic and strong company leading the industry in single-loop controllers. CAL's pioneering spirit established many of today's world standards for controllers such as the first 48mm x 48mm (1/16TH DIN) analogue controller, followed by the first digital controller of the same size and then the first 24mm x 48mm (1/32ND DIN) controller. CAL's range of easy-to-use controllers are supported by our unique and simple charting & logging software, CALCOMMS. CAL has developed a reputation based on *product support, innovation* and attractively-styled controllers that complement our customers equipment, panels and machines.

CAL's process controllers

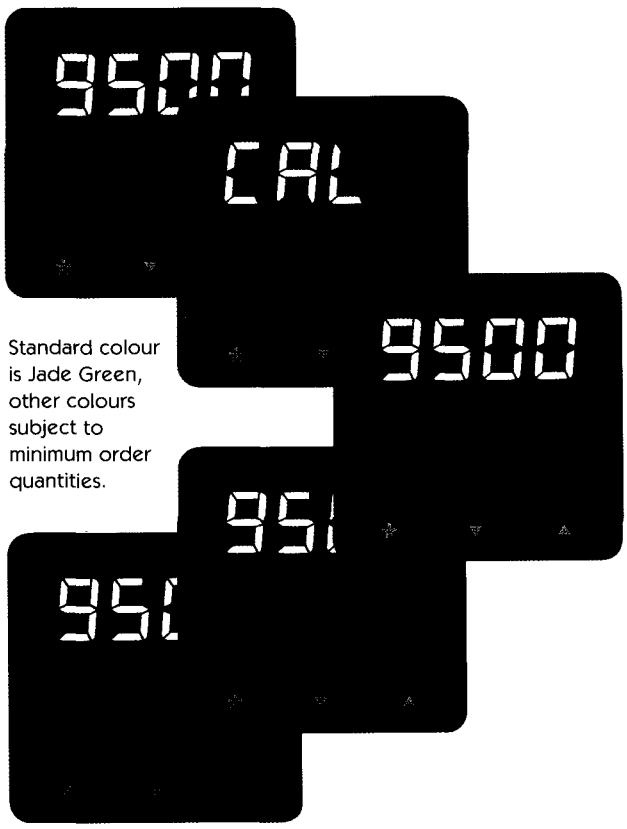
These controllers have combined all the benefits from CAL's range of temperature controllers, including communications options, styling and manufacturing together with a range of input and output options dedicated for controlling process applications.

Use these controllers for any process such as temperature, flow, level or pressure control. Using our communications options you can network several controllers together to control and data-log a complete application.

Example of networked Controller configuration into CALCOMMs



3-YEAR WARRANTY

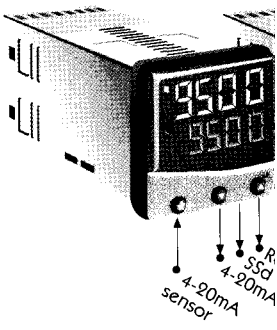


Standard colour is Jade Green, other colours subject to minimum order quantities.

Functionality

- Easy-to-use Auto-tune program
- Simpler to use than many controllers
- Full P.I.D. operation
- *Total of 3 outputs*
  - Control plus 2 alarms
  - Control, retransmit, alarm
  - Heat, Cool, alarm
- Single ramp/soak (dwell) program
- CE and UL compliant
- 4-20mA output for re-transmission

RS 485 multidrop connection from PC to controllers



Flow Control

Inputs

- Thermocouples
- 2 & 3-wire PT100 (RTD)
- 0-50mV
- 0-5V
- 0-10V
- 4-20mA current loop

Outputs

- Total of three outputs
- Output 3 is always relay
- Solid state relay driver (SSd)
- 2 amp relay
- 0-5V
- 0-10V
- 4-20mA current loop

Communications options

- RS232 or RS485 comm's module
- MODBUS RTU protocol
- CALCOMMS™ charting and logging software
- Example demo driver program with source code

Easy to scale input signals

CAL has made the task of scaling inputs very simple:
example: 4-20mA = 60–260 units, where 4mA = 60 units
note: 4-20mA corresponds to an input range of 10-50mV
Step 1, enter scale max' = 260,
Step 2, enter scale min' = 60,
Step 3, enter input max' = 50 (i.e. 50mV = 20mA)
Step 4, enter input min' = 10 (i.e. 10mV = 4mA).

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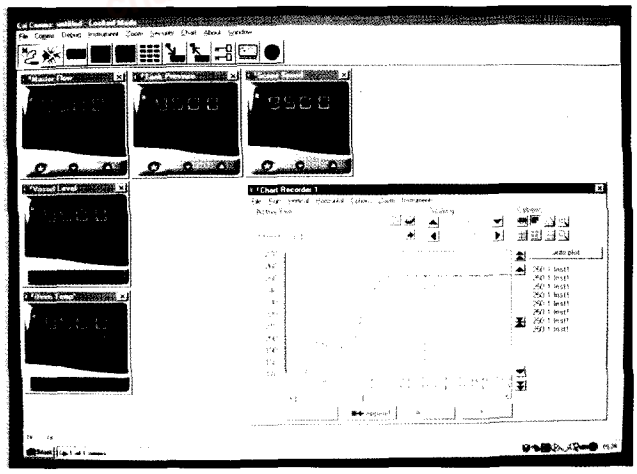
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Communications and Charting & Logging Software

CALCOMMS™ Chart-recorder and Data-logging software for Windows

CALCOMMS™ charting and Logging software is incredibly easy to use. It is designed to connect up to 128 controllers by RS485 into a standard or industrial PC. This allows the user to program all functions of the controller and to data-log the recorded process signal.

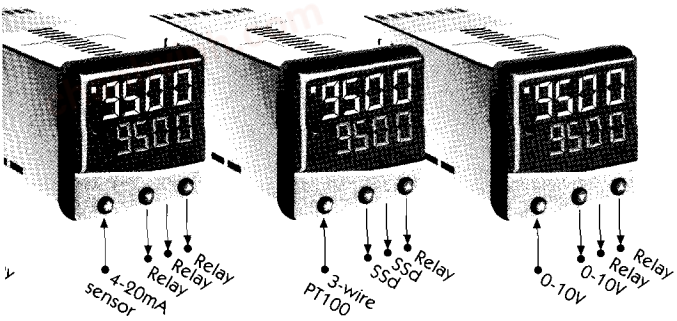


FREE demo-disk
CD demo of CALCOMMS® charting & logging software

CALCOMMS™ uses

- Easy configuration tool for controllers
- Data-logger for archiving process data
- Chart-recorder for viewing trend information
- On-screen display of process value
- Software 'on-screen' alarms
- To save and re-use applications for multiple controllers
- Remote set-point adjustment

RS 485 – Mobus RTU
– up to 128 Controllers



Level Control **Temperature Control** **Pressure Control**

Ideal for:

Recording process data for manufacturing reporting, quality control or health & safety purposes.

Applications:

Food industry, Dairy industry, Rubber & Plastics manufacturing, Ovens, Furnaces, Kilns, Plastics machines, Laboratory and Scientific equipment, Bottling and beverage production and many other process industries.

SPECIFICATION – CAL 9500

Thermocouple

9 types	
Standards:	IPTS/68/DIN 43710
CJC rejection:	20:1 (0.05°/°C) typical
External resistance:	100Ω maximum

Resistance thermometer

RTD/Pt100	2/3 wire
Standards:	DIN 43760 (100Ω 0°C/138.5Ω 100°C Pt)
Bulb current:	0.2mA maximum

Linear process inputs

mV range:	0 to 50mV, +/- 0.1%
	4-20mA, +/- 0.1%
	0-5V, +/- 0.1%
	0-10V, +/- 0.1%

Applicable to all 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
Miniature power relay:	form A/SPST contacts (AgCdO)
rLY, rLY1 and rLY3:	2A/250ac resistive load

Analogue output:	4–20mA 500Ω max +/- 0.1% fs typical
	0–5Vdc 10mA (500Ω min) +/- 0.1% fs typical
	0–10Vdc 10mA (1KΩ min) +/- 0.1% fs 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 - flashing SP1 square, green; SP2/SP3 round, red
Keypad:	3 elastomeric buttons

Environmental

Humidity:	Max 80%
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 (32-130°F)
Mouldings:	flame retardant polycarbonate
Weight:	180g (6.4 oz)

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")

ication notes, CALCOMMS demo and much more
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Technical Specifications

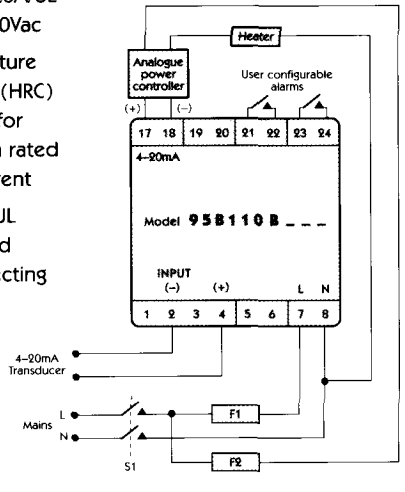
Typical Application

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.

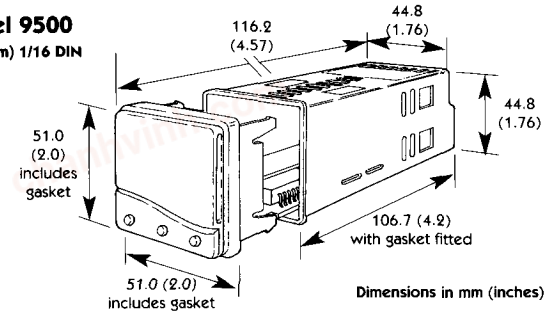
F1 Fuse: 1A time lag type to IEC127. CSA/UL rating 250Vac

F2 Fuse: High Rupture Capacity (HRC) Suitable for maximum rated load current

S1 Switch: IEC/CSA/UL Approved disconnecting device.

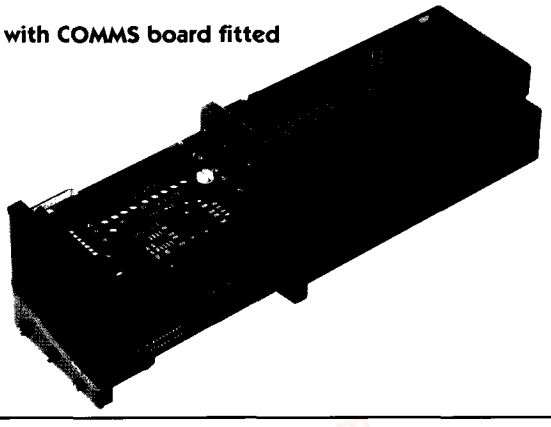


Model 9500
(48x48mm) 1/16 DIN



Dimensions in mm (inches)

9500 with COMMS board fitted



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
Unused		0
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 9500 ssd/relay/relay outputs
4-20mA input, RS485 fitted

95	00	1	0	B	4	00

Ordering example 2
Model 9500 with 4-20mA/ssd/relay outputs, sensor input, no comms

95	B2	1	0	A	0	00

Codes for additional software and hardware

CALCOMMS charting & logging software	10	01	XX	3	0	0
CALCOMMS CD Rom demo-disk	0	0	0	1	2	4
Communications board RS232	3C	00	00	2	0	0
Communications board RS485	3C	00	00	4	0	0
RS232 to RS485 converter	3C	24	00	0	0	0

Your nearest CAL contact;

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