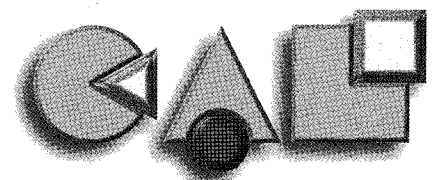


The CAL range of Process Controllers

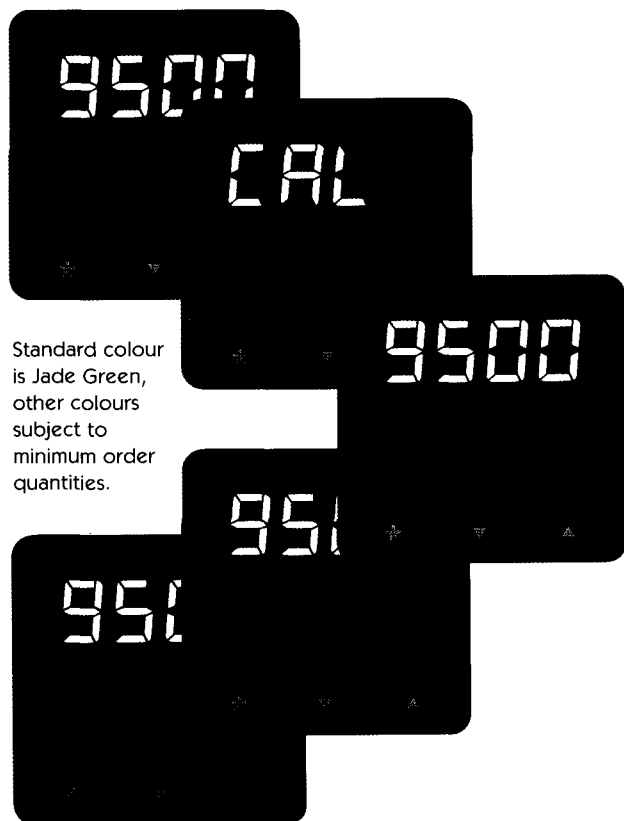


CAL Controls

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 (1/16THDIN) analogue controller, followed by the first digital controller of the same size and then the first 24mm x 48mm (1/32NDDIN) 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.



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

Communications options

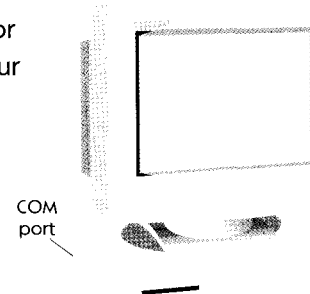
- RS232 or RS485 comm's module
- MODBUS RTU protocol
- CALCOMMS™ charting and logging software
- Example demo driver program with source code

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



COM port

3-YEAR WARRANTY

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

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

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

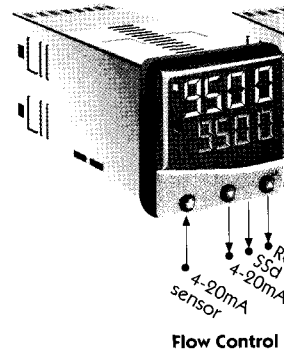
Step 1, enter scale max' = 260,

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).

RS 485 multidrop connection from PC to controllers



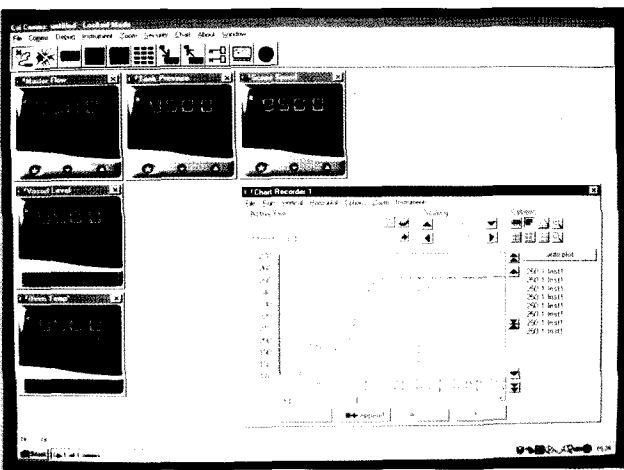
Visit our website for - pdf technical manuals, ap

www.cal-co

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.

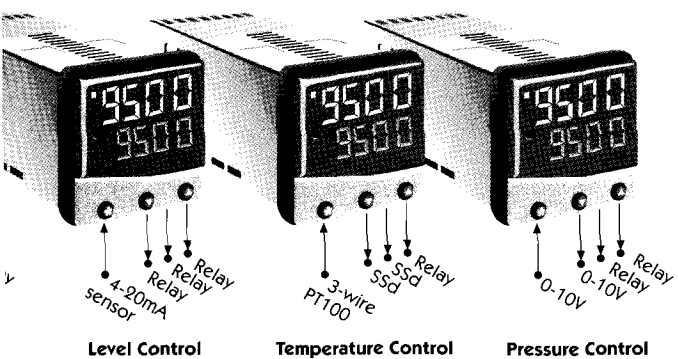


FREE demo-disk
CD demo of CALCOMMS®
charting & logging
software

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 – Modbus RTU
– up to 128 Controllers



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 form A/SPST contacts (AgCdO)
Miniature power relay: 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
3 elastomeric buttons

Keypad:

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



Technical Specifications

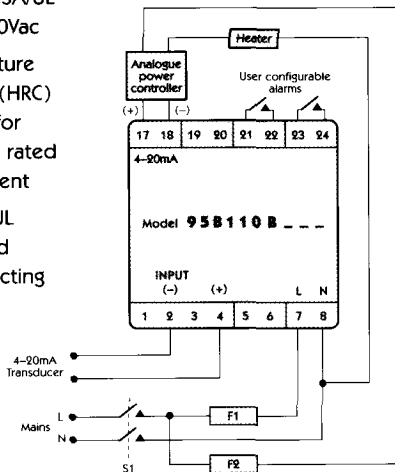
Typical Application

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.

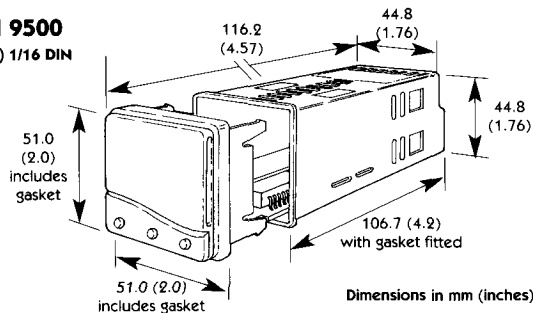
F1 Fuse: 1A time lag type to IEC127. CSA/UL rating 250Vac

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

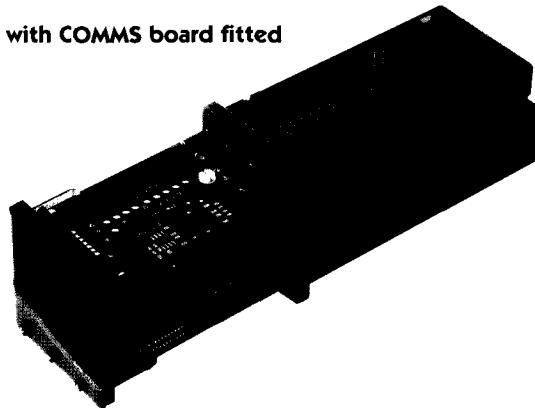
S1 Switch: IEC/CSA/UL Approved disconnecting device.



Model 9500
(48x48mm) 1/16 DIN



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
Output 3	0-10V / relay	D1
	0-10V / ssd	D2
	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;



CAL Controls Ltd (Headquarters)

Bury Mead Road, Hitchin, Herts, SG5 1RT. UK
Tel: + 44 (0)1462-436161 Fax: + 44 (0)1462-451801
email: sales@cal-controls.co.uk
http://www.cal-controls.com

CAL Controls Inc

1580 S. Milwaukee Avenue, Libertyville, IL 60048. USA
Tel: (847) 680-7080 Fax: (847) 816-6852
email: sales@cal-controls.com
http://www.cal-controls.com