

# The CAL 4600

## Advanced Process Controller



Graphic display  
with text

Profiler

Data logger

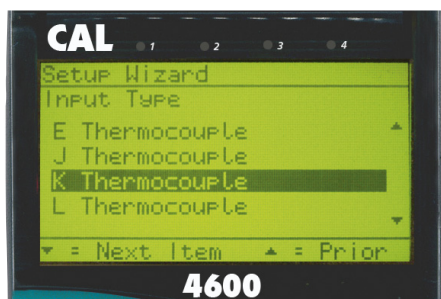


**CAL Controls**



# Enhanced process visibility and improv

The CAL 4600 is an affordable temperature & process controller with advanced functionality including profiling and datalogging options. The CAL 4600 incorporates a graphic/text LCD display and is designed to improve user efficiency with many features integrated to reduce commissioning time, simplify operation and minimise maintenance down-time.

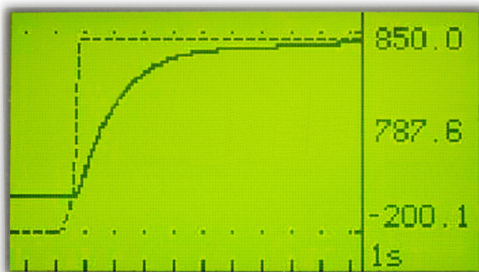


## Improved process visibility

One of the key factors in maintaining and improving operation of a system is to have high visibility of the process. The LCD screen on the 4600 displays clear real-text messages, removing ambiguity that can be caused by mnemonic codes on LED displays used in many products.

## Simplified Operation

Improve operator efficiency and reduce the possibility of errors by creating an optimised menu structure for screen navigation. The 4600 configuration tool is used to provide operators with the specific parameters needed in the order you want them. Security is assured with password protection on supervisor and configuration parameter access levels.



## A complete control solution

The integrated control and monitoring functions of the 4600 results in fewer components, reduced wiring, less space required .....and lower cost. Advanced process and temperature control, extensive profiling capability, high visibility alarms and datalogging functions all packaged within a single 1/4 DIN product.

## Minimise setup time

Constantly referring to manuals when commissioning is time consuming and can lead to confusion. A number of tools are available for the 4600 to simplify the configuration process; an easy setup wizard, on-screen help, BlueControl software for on or offline programming and secure local configuration with a memory stick via the front access USB port.



# ed user operation

## Real text display with graphics

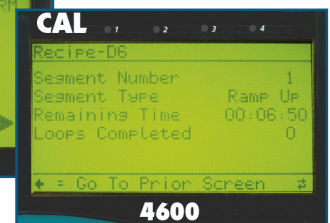
- Easy to read green/red LCD display
- Screen colour can be set to change on alarm
- Multi-language option (English, French, German, Italian, Spanish)
- Custom splash-screen on startup – add your company logo
- Graphic trend display
- LED indication of heat, cool, autotuning and alarms

## Profiling functionality

- 255 segments to allocate freely in up to 64 programs
- Ramp, dwell, hold, loop or jump to other profile
- User-defined text profile names
- Delayed or day/time profile start
- Detailed overview of profile status
- Up to 5 event outputs
- Bargraph shows profile and current segment progress

## Advanced process control

- Easy setup wizard for quick configuration. (inputs, alarms, outputs & comms parameters)
- Universal input for thermocouple, RTDs and linear DC process signals (mA, mV, or V)
- Flexible output options (9 max); relay, ssd driver, triac & linear DC. Select to match the needs of the process
- Digital input for setpoint selection, profile control, log start/stop, control output enable/disable or auto/manual control
- Configurable menus (via Blue Control)
- Pre-tune and self-tune function
- RS485 Modbus or Ethernet comms option
- USB port for local upload/download of configuration files
- Master-slave configuration for multi-zone applications



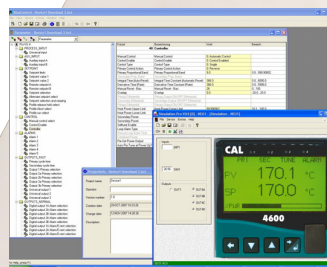
## Integrated datalogging option

- Historic process data for analysis or reporting
- Trend view and alarm indication
- Export data files via front USB or comms
- Log process values, setpoints or alarms (including min, max & ave)
- Run-then-stop or FIFO (first in - first out) recording
- Logging time intervals from 1s to 30m

## BlueControl configuration suite

Save commissioning time by utilising the configuration tools within BlueControl PC-based software.

- Change parameter settings
- PID tuning
- Offline simulation tools – reduce risk
- Visibility of live process data – fine-tune settings for optimum performance
- Back-up of all settings for quick reconfiguration



Customise ProVU for your process

- Add a splash screen with your company logo
- Optimised menu structure – reduce keypresses & simplify operation
- Modify displayed text labels to match system operation
- Create a company contact page

# Specification

## Features

Control types	Full PID with pre-tune, auto-pretune, self-tune or manual tuning, heat only or heat & cool
Auto manual	Selectable with 'bumpless' transfer when switching between auto and manual control
Output configuration	Up to 9 for control, alarms, profiler event outputs, 24VDC transmitter PSU & retransmission.
Alarms	Up to 5 alarms selectable as process high, process low, deviation & band, plus sensor break and loop alarms. Logical OR alarm outputs.
Display	160 x 80 pixel, monochrome graphic LCD with a dual colour (red/green) backlight
PC configuration	BlueControl configuration and commissioning software

## Input

Thermocouple	J, K, R, S, T, B, C, D, E, L, N, PtRh 20%:40%
RTD	3 wire PT100, NI120
DC Linear	0-20mA, 4-20mA, 0-50mV, 10-50mV, 0-5V, 1-5V, 0-10V, 2-10V (0-100mV and 2kOhm pot also on aux-B input) scaling -1999 to 9999
Accuracy	±0.1% of input range ± 1 LSD, Thermocouple CJC, (Aux Input : ±0.25% of input range ± 1 LSD)
Sampling rate	Process input 10 per second, Aux input : 4 per second
Sensor break	Detected within 2 secs, control goes to user preset power value.
Digital inputs	Functions: setpoint select, control output, enable/disable, auto/manual control, profiler run/hold/abort, datalogger start/stop Volt free contact or DC voltage: open contact / 2 to 24VDC signal = Logic high, closed contact / -0.6 to 0.8VDC signal = Logic low

## Outputs

Relay	Single relay: 2A resistive SPDT at 120/240VAC, > 500,000 operations Dual & Quad relay: 2A resistive SPST at 120/240VDC, >200,000 operations (dual) or >500,000 operations (quad)
SSR Driver	Voltage >10V into 500Ω min
Triac	Operating voltage: 20 to 280Vrms (47 to 63Hz), Rating 0.01 to 1A @ 25°C
Linear DC	Ranges: 0-5V, 0-10V, 1-5V, 2-10V, 0-20mA & 4-20mA (selectable) ±0.25% of range (mA@250Ω, V@2kΩ)
Transmitter PSU	Power rating 24V nominal (19 to 28VDC) into 910Ω min (option to use DC linear output as 0-10V adjustable Tx PSU)
Communications	RS232 via RJ11 cable, (configuration only) RS485 - Modbus RTU master or slave, Ethernet - Modbus TCP slave (10 base-T or 100 base-T), Ver 1.1/2.0 USB host for memory stick

## Profiler

Memory	255 segments can be freely allocated in up to 64 programs
Segment types	Ramp (rate or time), dwell (soak), hold (manual guaranteed soak or real-time profiling), loop (to previous segment), join another profile, end or repeat sequence
Control	Run, hold, abort, profile select, jump to next segment, delayed profile start, real-time clock profile start.

## Datalogger

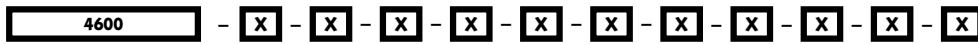
Data record options	PV (Process variable), max and min PV between samples, actual SP (setpoint), output power, alarm & event status, power on/off
Record modes	FIFO (circular buffer) or run-then-stop (fixed buffer)
Recording Interval	1, 2, 5, 10, 15, 30 sec or 1, 2, 5, 10, 15, 30 min
Control	Manual, serial comms, digital input, synchronised with profile, PV rate of change, log on alarm

## Environmental

Standards	CE, UL, cUL, EMI - EN61326, Safety EN61010-1 & UL61010C-1 Pollution degree 2, Installation category II
Protection	Fascia IP66 (IP65 with USB fitted), Behind panel IP20
Dimensions & Weight	Front Panel 96 x 96mm (Panel cutout 92 x 92mm), Behind panel depth -117mm. 0.65kg maximum

For a detailed product specification please download the 4600 datasheet at [www.cal-controls.com](http://www.cal-controls.com) or call your nearest sales office

# Ordering Information



<b>Unit Type</b>	
Controller	C
Controller with USB Port	U
Controller/Recorder with USB Port	R
<b>Profiler Option</b>	
Not Fitted	0
Profiler	P
<b>Supply Voltage</b>	
100-240V AC	0
24-48V AC or DC	2
<b>Option Slot 1</b>	
Not Fitted	0
Relay Output	1
DC Drive Output for SSR	2
Linear DC Output	L
Triac Output	8
<b>Option Slot 2</b>	
Not Fitted	0
Relay Output	1
DC Drive Output for SSR	2
Linear DC Output	L
Triac Output	8
Dual Relay Output	9
Dual SSR Driver Output	S
24V DC Transmitter Power Supply	T

<b>Display Language</b>	
1	English
2	French
3	German
4	Italian
5	Spanish
<b>Option Slot C</b>	
0	Not Fitted
1	Reserved for future options
<b>Option Slot B</b>	
0	Not Fitted
R	Aux input B
<b>Option Slot A</b>	
0	Not Fitted
1	RS485 Serial Comms
3	Digital Input 1
4	Remote Setpoint (RSP) Input A
5	Ethernet Port
<b>Option Slot 4</b>	
0	Not Fitted
1	4 Relay Output
<b>Option Slot 3</b>	
0	Not fitted
1	Relay Output
2	DC Drive Output for SSR
L	Linear DC Output
8	Triac Output
9	Dual relay Output
S	Dual SSR Driver Output
T	24VDC Transmitter Power Supply

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