



## FEATURES

- 9 programs—each with up to 9 segments
- 2 controlled heating / cooling ramps + soak per segment
- Suitable for ceramics or glass use
- Soak times up to nearly 100 hours
- Ramp rates from 1 to 999°C/hour + full
- Programs can be reviewed or altered while firing
- Program Pause & Segment Advance facilities
- Keyboard lockable
- Delayed start facility - up to 4 days
- Power failure recovery
- Energy used display
- Standard alarm / safety relay with alarm buzzer

## DESCRIPTION

### GENERAL

The ST316B is a 9-program controller designed for pottery, ceramics & glass firing. Each program can have from 1 to 9 segments. It is fully adjustable with a detailed 6-lamp mimic display & continuous display of program & segment numbers. Each segment comprises 2 ramps followed by a soak. Ramps can be heating or cooling. It executes a controlled ramp to temperature t1 then it executes another controlled ramp to temperature t2. It soaks at t2 for the required period then executes the next segment. The end of the program is marked by selecting 'End' while entering a ramp rate. Natural cooling then follows.

### PROGRAMMING

Press the ► key to flash the program number display – this can be changed if required with the ▲ & ▼ keys. To change any of the controller's settings press the ► key (or reverse with the ◀ key) until the required lamp on the mimic display flashes. The current value will be displayed together with the units (°C, °C/hr or hr.min). Change the displayed settings with the ▲ & ▼ keys which can be held down for acceleration. All settings are remembered while the controller is powered off. The keyboard can be locked to prevent tampering.

### FIRING

The ►■ (START/STOP) key is used to commence or halt a firing. The progress of the firing is shown on the mimic display. If a start delay has been set then the delay time remaining will be displayed. During firing the settings can be reviewed and altered if required, the program can be paused/resumed or a segment can be advanced. During soaking the soak time remaining and the soak temperature are alternately displayed. In the event of a power failure the controller will intelligently re-commence firing when power returns.

### CONFIGURATION

The ST316B is factory configured as a signal controller to drive kilns contactors. Such kilns are often fitted with an industry standard control socket and the ST316B can be supplied fitted with a mating controller plug and lead if required. Power controllers are used to directly switch power to smaller kilns (up to 5kW power rating) which do not have control gear.

The ST316B is supplied with a metal holster style wall mounting bracket. A User Handbook and an Installation Handbook are provided.

## SPECIFICATION

### Electrical

#### Power supply

Voltage range: 100 - 253V  
Frequency: 50/60Hz  
Phases: 1  
Power: Controller 3VA

Fuse: 3.15A slow-blow HRC  
20mm x 5mm ceramic

#### Control Relays

Contact type: SPST NO  
Switched live mains outputs  
@300mA max  
(for driving contactors)

#### Connectors

Thermocouple: 3.5mm plug/socket  
Power: 5mm plug/socket

### Temperature

#### Temperature setting (t1 & t2)

Range: 0 to 1400°C (R/S) 0 to 1200°C (K/N)  
Resolution: 1°C

#### Control Accuracy

P.I.D. Control  
Reading accuracy: ±0.25% FSD ±1 digit

#### Thermocouple

R,S,K & N type (selectable)

#### Cold Junction Compensation

Yes - precision NTC thermistor

### Time

Start delay range: 00:00 to 99hr 59min  
Soak time range: 00:00 to 99hr 59min  
Resolution: 1 min

### Programs

9 programs each with 1-9 segments  
2 ramps & 1 soak per segment  
1st ramp rate: 1 to 999°C/hour or full power  
2nd ramp rate: 1 to 999°C/hour or full power  
Ramps can be heating or cooling

### Environmental

Operating temperature range: -10°C to +55°C  
Storage temperature range: -10°C to +55°C

### Enclosure

Material: ABS                      Size: 120x122x58mm  
Sealing: IP65                      Fixings: 90x110mm  
Colour: Light Grey (4 off) + wall mounting  
RAL 7035                              bracket (optional)

### Error Handling

Thermocouple failure detection  
Thermocouple reversal detection  
Heater failure detection  
Kiln over-temperature detection  
Room over-temperature detection  
Lock-up on error facility

### Other

Keyboard lock facility + indicator  
Program running & kiln heating-on indicators  
Energy used display  
Program pause & segment advance features

### Weight

Instrument + wall bracket: 0.505kg  
Shipping weight: 0.915kg  
(weight does not include any fitted leads)

## FURTHER DETAILS

Complete operating & installation instruction handbooks can be downloaded from our web site at [www.staffordinstruments.co.uk](http://www.staffordinstruments.co.uk)

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[www.staffordinstruments.co.uk/docs/st316b/data316b.pdf](http://www.staffordinstruments.co.uk/docs/st316b/data316b.pdf)

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