



## Installation Instructions

## SETUP PARAMETERS

Installer / Setup mode is entered by pressing and holding the ► key for 5 seconds.. To exit this mode do not press any keys for 10 seconds - ST131 will save any changed values then restart.

Setup Parameter	Default Value	Range
P00 Thermocouple type	2	0 - 3 (0=K, 1=N, 2=R, 3=S)
P01 Trip temperature T1	1320°C	30 - 1400°C
P02 Trip temperature T2	600°C	30 - 1400°C
P03 Operating mode	1	1 - 7
P04 Hysteresis TH	5°C	2 - 50°C
P05 Display brightness	3	0 - 6
P06 Internal buzzer disable	0	0 - 1 (1= disabled)
P07 Ambient trip temperature	50°C	40 - 71°C (71= disabled)
P08 Lockout for engineer enable	0	0 - 1 (1 = lockout enabled)

P08 can be enabled to prevent error messages being reset by power off/on cycling. This can be used to force a service engineer call out to determine the cause of, and to fix the problem. To clear errors when P08 is enabled enter Installer / Setup mode as described above, then wait 10 seconds without pressing any keys.

## OPERATING MODES

### Mode 1: Over-temperature trip

T1 is the trip temperature. T2 not used. Relay energised while  $t < T1$ . Relay de-energised and internal buzzer sounds when  $t = T1$ . Internal buzzer can be muted by pressing any key. "Err1" is intermittently displayed. Ambient temperature trip is active (unless disabled). Power cycle to reset.

### Mode 2: Damper / Heat Lock

T1 is damper/lock closing temperature. T2 is damper/lock opening temperature. Relay initially de-energised. Relay energised when  $t = T1$ . Then, if  $T2 = T1$ , waits for  $t = (T2 + TH)$ . Relay de-energises when  $t = T2$ . Ambient trip inactive.

### Mode 3: Damper / Heat Lock - Relay reversed

Same as mode 2 but the operation of the relay is reversed

### Mode 4: Temperature Window Detector

T1 is warning start temperature. T2 is warning finish temperature. Ambient trip inactive.

If  $T2 > T1$ : Heating window detector  
Relay energises and buzzer sounds when  $t = T1$   
Relay de-energises and buzzer mutes either when  $t = T2$  or any key is pressed

If  $T2 < T1$ : Cooling window detector  
Waits until  $t = (T1 + TH)$ .  
Relay energises and buzzer sounds when  $t = T1$   
Relay de-energises and buzzer mutes either when  $t = T2$  or any key is pressed

**Mode 5: Temperature Window Detector - Relay reversed**  
Same as mode 4 but the operation of the relay is reversed

### Mode 6: On/Off Temperature Control

T1 is set-point. T2 not used. Ambient temperature trip is active (unless disabled).  
If  $t = (T1 - TH)$  relay is energised. If  $t = T1$  relay is de-energised.

## PIN LIST

Pin	Function
L	Live power feed I/P to ST131 (90 - 264VAC)
N	Neutral power feed I/P
FL	Fused Live O/P to power relay contacts (connect to C pin if required)
NO	Normally Open relay contact
C	Common relay contact (moving contact)
NC	Normally Closed relay contact
TC+	Thermocouple Positive I/P
TC-	Thermocouple Negative I/P

## KEY LOCK

This is an anti-tamper feature. To lock the ST131 keyboard press and hold down the ▲ key and ▼ key together for 10 seconds. The display will show "LOC". Repeat this procedure to unlock - the display will show "ULOC".

## RELAY ON INDICATOR

The decimal point character in the bottom right hand corner of the display lights up to indicate when the relay is energised.

## AMBIENT TRIP

The ST131 measures its own internal temperature - this will be similar to the ambient temperature. If enabled, "Err7" will be shown if the ambient temperature exceeds the trip temperature (50°C default). This feature is only active in operating modes 1 and 6 and is provided to shut down a heating process in the event of room temperature getting too hot (because of ventilation fan failure for example).

## SPECIFICATION

### Electrical

**Power supply**  
Voltage range: 85 - 265V  
Frequency: 50/60Hz  
Power: 2.5VA  
Fuse: 3.15A(T) 20mm x 5mm

### Relay

Contact type: SPCO Volt-free  
3A max. @230VAC

### Thermocouple

R,S,K,N (installer selectable)

### Connector

Pluggable screw terminal block  
(5mm pitch)

### Temperature

**Accuracy**  
±1°C typical, ±3°C maximum

### Cold Junction Compensation

Yes

### Weight

Unit weight: 144g (with connector)  
Packaged weight: 176g

### Size

Unit size (mm):  
103(L) x 53(W) x 58(D)  
Packaged size (mm):  
108(L) x 95(W) x 67(D)

### Environmental

Operating temperature range:  
-10°C to +70°C  
Storage temperature range:  
-10°C to +70°C

### Enclosure

Material: Polycarbonate (UL 94 V0)  
Sealing: none  
Colour: light grey (RAL 7035)

### IP20

### Error Handling

Thermocouple failure detection  
Ambient over-temperature trip  
Warning buzzer

## NOTICES



This product complies with Council Directive 89/336/EC (EMC) & Council Directive 2006/95/EC (safety)

Council Directives 2002/96/EC & 2003/108/EC



The crossed out bin symbol, placed on this product, reminds you of the need to dispose of the product properly at the end of its life. Electrical & Electronic Equipment should never be disposed of with general waste but must be separately collected for proper treatment. In this way you will assist in the recovery, recycling & reuse of many of the materials used in this product.

## ERROR MESSAGES

- Err1:** Over-temperature alarm in mode 1
- Err2:** Thermocouple open circuit
- Err3:** Thermocouple reads less than -40°C. This could be an installation error (thermocouple reversed)
- Err7:** Ambient trip temperature exceeded

To clear any of these error messages turn off the power to the ST131 then turn it on again. After a few seconds the error will show again if the fault is still present.