STAFFORD INSTRUMENTS ST131

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 Hysterisis 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

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.

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:
-10ºC to +70ºC

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

CE 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.

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